AMERICAN FORESTS

OCTOBER 1943

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AMERICAN FORESTS

VOLUME 49 OCTOBER, 1943 NUMBER 10

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OVID BUTLER

Associate Editors
LILIAN CROMELIN ERLE KAUFFMAN

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THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

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The Forest Exchange

Clubwomen Support AFA Project

SIR: The General Federation of Women's Clubs is more vitally concerned in our forest resources than ever before, due to wood being drafted for war. All of our efforts are geared to shortening and winning this global war, and when the war is won, for maintaining a peace to provide abundant living for mankind. Forest products are indispensable during war and peace; therefore, we are grateful for the constructive action of The American Forestry Association to appraise the war's effect on our indispensable forest resources. Our clubwomen stand ready to aid in whatever ways we can in accord with our policies to conserve our natural resources, and we heartily endorse the proposal. — *Mrs. T. M. Francis,* Chairman, Committee on Conservation of Natural Resources, General Federation of Women's Clubs, Birmingham, Alabama.

Important Trees of History

SIR: My interest in trees has been greatly stimulated by The American Forestry Asociation's book KNOWING YOUR TREES, by G. H. Collingwood. As a medium of tree identification it is superb, thanks to the excellent photographs, and the factual matter about each species is so simply and interestingly stated that even my youngsters have become well acquainted with the book—and, of course, our important trees.

Since we are all deeply interested these days in history, it occurs to me that a revealing story of the part trees have played in American history would be of great interest. I would like to know, for instance, what five trees are considered by the experts as contributing the most to the building of our country. Is such information available? — *Charles K. Rogers,* New York.

Attention: Plywood Manufacturers

SIR: By adopting a "Returnable Engine Crate Program," the Army Air Forces is saving 180,000,000 feet of lumber a year—a saving of over $7,000,000 to taxpayers.

This program was necessary because of the critical situation in softwood plywood, and it is necessary for manufacturers to participate in the program to secure additional allotments of softwood plywood.

The orders which the plywood mills had on hand with AA-1 ratings have increased from eighty-five to ninety-seven percent, and the mills have recently been receiving orders at the rate of 50,000,000 feet a week, which is exactly double their capacity to produce. Obviously, the only solution to the problem was to allocate the plywood so essential needs will be served.

The use of plywood for construction purposes is being prohibited and plywood generally is being restricted—so far as container material is concerned—to the packaging of airborne freight and other essential uses.

We will appreciate your cooperation in publishing this information in AMERICAN FORESTS so that manufacturers will understand the necessity of their participation in this new program.—*Lieutenant Colonel A. E. R. Peterka,* Air Corps, Dayton, Ohio.

We'll Do Our Best

SIR: After reading the account of the fiftieth expedition of the Trail Riders in the September issue, I was amazed at the number of women taking these wilderness pack trips—and especially that a woman is the top-ranking Trail Rider. Certainly this is a real tribute to American womanhood—to their deep appreciation of our outdoor heritage.

I hope you will continue to provide this wonderful opportunity for Americans to know and enjoy their magnificent forests and mountains.—*Mrs. Dwight Thomas Jackson,* St. Petersburg, Florida.

A New Rhododendron

SIR: A few years ago, in search for some of the finer *Rhododendron calendulaceum,* one plant of the hose-in-hose type was found. According to obtainable information on the subject, this plant, about thirty inches high, is the only one of its kind ever known to exist.

It was discovered growing at an elevation of about 3,100 feet in the Appalachian Range, practically at the edge of a steep cliff. The two large roots of the plant—it did not have the usual fibrous root system—were well anchored in a crevice of a massive rock formation.

The plant was successfully transplanted and bloomed last summer. It will be used in hybridizing other choice *calendulacea* and other species. Perhaps the hose-in-hose type can be transmitted to offsprings with larger corolla, better quality and different colors.—*Walter M. Peacock,* Bridgeton, New Jersey.

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THE EDITOR'S LOG

Let's Stop Those Fires!

With warlike urgency, President Roosevelt by proclamation has designated October 3 to 9 as Fire Prevention Week. "The cause was never so clear; the need was never so great," he said, in calling upon state and local governments, business and labor, educators, the pulpit, civic groups, the press and radio and the motion picture industry to initiate programs that will vividly bring home "to all our people the dangers of fire and the methods of controlling it."

The President further directed the Office of Civilian Defense, the War and Navy departments, and other federal agencies to lend their support and assistance to the attainment of these objectives.

The reason for this coordinated nationwide drive is immediately apparent in the first words of the President's proclamation. "This nation's war program," he said, "is menaced by an alarming increase in preventable fire losses. Since Pearl Harbor the destruction caused by fire in the United States has been comparable to the damage caused by all enemy bombing over England during the first two years of the war."

Sad to relate, this increase in preventable fire losses has not been confined to home, factory and warehouse. Forest fires, at a time when wood is one of our most critical war materials, have also increased. The shameful fact is that in 1942 there were 8,500 more forest fires than in the pre-war year of 1941; that the increase in area burned exceeded 5,000,000 acres; and that losses in timber destroyed were $7,500,000 greater than in 1941.

That the White House is aware of this tragic situation—though in many ways little has been done about it—is reflected by Mrs. Eleanor Roosevelt in her syndicated column "My Day" for August 25.

"Important as I think the prevention of fires in the home may be," the First Lady writes, "I think the prevention of forest fires is of even greater importance. These fires may burn many homes, but even if they do not take human lives and property, the mere burning over a wooded area is a great material loss to more than one generation.

"We, in this country, must be very careless, for as you fly over many miles in the United States, you can see below you, over and over again, great patches on mountains and hills of charred stumps. This often means that before the hillside is reseeded the rains have washed the soil away. The mountain is bare and there are floods in the valley below. Good soil is washed down into the sea and the people have lost a part of their inheritance.

"Many lumbering companies do a wonderful job in clearing up any area they cut and replanting seedlings, so that the land may continue to be an asset for future generations. Other companies, however, are interested only in getting out the lumber which will bring them an immediate income. These people are the ones who despoil our country just as surely as any foreign enemy. . . .

"It is important to train all workers in great lumber industries to see and recognize the importance of conservation through prevention of forest fires. If they look upon their work not just as a job to cut down trees, but as a job which preserves the forests for the future as well as for the present, we shall make strides in the care of our forests."

This basic fire prevention principle is ably stated by Mrs. Roosevelt. But to single out the lumberman as a major source of forest fires is to run contrary to fact. As reported by the U. S. Forest Service—and the figures should be broadcast from every source during Fire Prevention Week—the incendiarist and the smoker are responsible for fifty percent of the 200,000 forest fires recorded in the United States yearly. The brush burning farmer is the cause of fifteen percent; railroads six percent, the careless camper four percent — or twice as many as lumbering operations which, in 1942, were credited with less than two percent. Let's put the blame where it belongs and stop forest fires—where they start!

Wooden Ships and Iron Men

If you are one of those moderns who speak of "wooden ships and iron men" as curiosities of the romantic past, the words of Rear Admiral C. H. Woodward, United States Navy, will jar you not a little. In this era of mechanized warfare, the Admiral stated recently, "it may come as a surprise to some to realize that our great modern Navy, with its mighty battle-wagons like the 45,000-ton IOWA, is still as dependent on the output of the lumber camps and sawmills as were the wooden-hulled frigates of John Paul Jones' time. There are hundreds of wooden ships with the Fleet at this moment, many right in the thick of battle. As for 'iron men,' the reports that daily reach us from the fighting fronts prove that the bluejacket and merchant sailors who man our ships today are the equal in toughness and sheer physical courage of any salt-encrusted seaman that ever trod a deck."

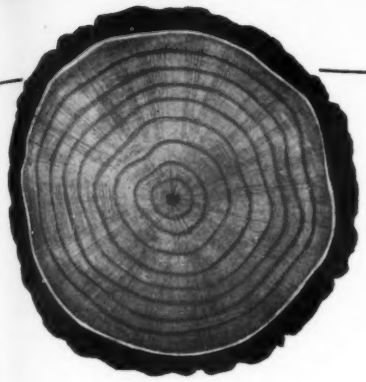
Wooden landing vessels and assault craft formed the spearhead of the successful North African and Sicilian invasions, the Admiral said. Wooden sub-chasers and Coast Guard cutters are playing a smashing role in the fight to overcome the U-boat menace. The wooden mosquito boats of Lieutenant Commander John Bulkeley's squadron alone sank three Jap cruisers, two cargo ships, a tanker, two barges loaded with troops and downed four planes.

Wood also, he said, is "the bone and substance of cargo and passenger transports, floating dry docks, harbor patrol boats, mine layers, mine sweepers, submarine tenders, destroyer tenders, river gunboats, repair ships, crane ships, auxiliary ammunition ships, tugboats, submarine rescue vessels, hospital ships—the list could be extended indefinitely."

Steel-hulled battleships require more than 300,000 board feet for decking alone, he revealed. For an aircraft carrier like the new LEXINGTON, over 250,000 feet of edge-grain Douglas fir must be provided for the flight-deck. Into each 110-foot sub-chaser goes a quarter of a million feet of lumber for keel, frame, hull and decking.

"A single mobile dry dock far from home waters may require 1,000,000 board feet of lumber," he pointed out. "Millions of feet must also go into piers and shipways at Naval shore establishments. Inland supply depots require wood in astronomical figures. The Naval air arm requires wood for training planes, for hangars, repair shops, barracks and classrooms. In the new escort carriers being added to the Fleet, wood is a major item."

But in point of magnitude, said Admiral Woodward, "the most challenging requirement of wood at the present time is for packaging—wood for boxes, crates and barrels to keep



munitions, machinery, spare parts, food, medicines and equipment steadily moving to our forces and Allies on the fighting fronts."

What all this means in terms of lumber requirements during the next crucial months can best be ascertained from the over-all picture of current Naval expansion, the Admiral said. "According to Secretary Knox, by the end of 1943 the Navy expects to complete more combatant ships—exclusive of auxiliaries, mine, patrol and landing craft—than there were fighting ships in service at the end of 1942. The number of warships in the Fleet will thus be doubled in a single year."

Last year's lumber production for all war purposes fell short of actual requirements by billions of feet, he pointed out. "Fortunately, the existing large reserve stocks of lumber were built up in peacetime and met all essential requirements. These reserves are now rapidly nearing depletion, and unless production in the lumber camps and sawmills can be accelerated, every phase of our war program may have to slow down.

"For you can't fight a war, much less carve out ultimate victory, without wood."

Sawmills—Big and Little

Recently, a well known news columnist charged that the Army, to meet its immense lumber requirements, preferred to deal with the large sawmills and that in consequence thousands of small mills are shut down, presumably for lack of orders. He highlighted this against the fact that war requirements for lumber are not being met.

The implications here are not necessarily sinister. Doubtless the Army does prefer to place its orders with the larger mills—and with good reason. Sawmills vary in size from those cutting 100,000,000 feet a day to those scarcely able to produce a few thousand feet. There are relatively few giant mills and literally thousands of small ones. The large mills produce approximately fifty percent of our lumber.

Individually, the small mills do not lend themselves to industrial production. Thousands are owned by small contractors, farmers and others who operate only when not otherwise employed. Even in normal times it would be difficult, due to the lack of skilled labor, for them to operate full time. Few own much timberland, the majority buying stumpage from farmers and other small landowners. Most of the small mills are portable and move from tract to tract. Seldom are they equipped to do more than manufacture rough lumber to approximate specifications. And only under special conditions does their product enter general trade channels, or is it marketed on a quality parity with that of the large mills.

The woods practices of the small mills are far too often destructive not only to future forest values but also to present ones. They are generally inefficient and waste much valuable material in cutting. Frequently, they are accused of paying sub-standard wages and stumpage prices.

But the small mills cannot be ignored. Despite the fact that fewer are shut down now than normally, many more small operations are needed to meet war requirements of lumber.

The government is aware of this situation and has moved to lend thousands of small mills a helping hand. Just recently the War Production Board and the U. S. Forest Service, under sanction of Congress and the President, set up a cooperative project designed to increase lumber production from small mills. Under the plan, the WPB will determine lumber needs as to kinds and grades, and the Forest Service will strive to stimulate production. The latter will function through a field force designed, as an economist would phrase it, "to bring all the elements of production together."

How much lumber will be added to the war effort by this pumping of many little wells remains to be seen. Nevertheless, the project seems well worth the effort in the light of current war needs for lumber. And properly conducted, it may bring about an improvement of the products and operations of small mills and in turning them into tools for constructive rather than destructive forest practices. If the small mill is the mill of the future, as some believe, it must function to better advantage than in the past.

Les Chasseurs Allemands

The slightly European atmosphere of the outdoor restaurant at the New York Zoological Park was perhaps as good a place as could be found in that city to discuss the effect of the German occupation on European wildlife. Certainly our host was better able to tell us than anyone else in America. He was M. Jean Delacour, officer in the Army of France in two wars, President of the International Committee for Bird Preservation, and now adviser for the New York Zoological Society.

M. Delacour contrasted the effect of the two wars on wildlife in France. In the first world war with all able-bodied Frenchmen mobilized there was little hunting and game populations increased—even in the zone of hostilities.

This time it is different. The Germans immediately took all sporting arms and ammunition from the people of the occupied countries, not to spare the game but with full realization that even a small calibre hunting rifle could be used to kill a German. Hunting became a German monopoly. Perhaps some of *les chasseurs Allemands* hunt for sport in the French and American sense, but actually the objective is to secure a meat supply for German use. Pot hunting is carried on without regard to land ownership, French game laws, or the future game supply. The extermination is carried on with methodical Teutonic efficiency.

To confirm these observations, the German press in July, 1943, stated: "Last year German hunters killed 30,000 tons of game. A large percentage goes to the trade which allots fifty percent to the armament industry, fifteen percent to military hospitals, and ten percent to factory canteens."

Perhaps in the light of deliberate and wholesale slaughter of human beings game slaughter is only a misdemeanor, but it should count in civilization's indictment against calculated barbarism.

Ovid Butler

FIRE-

By JOHN CLARK HUNT

LIKE warfare, successful forest fire protection is primarily a matter of trained men and good equipment in sufficient strength at the right place at the right time. In some instances, the machines of war are also the instruments of forest protection; and the training of a forest protectionist in many respects parallels that of a soldier. Trucks and tractors, for example, are as essential to forest fire-fighters as they are to Army engineers. And physical stamina, mechanical ability and cool judgment in emergencies are required of both the warrior and the fire-fighter.

This being the case, it seems reasonable to expect that when the shooting is over and millions of war-tried men and machines are available for the task of building the basis for lasting peace, the tools and training that fashioned victory can and will be applied to the protection and restoration of depleted resources. The forests, which contribute so much to the successful conduct of war, no doubt will enjoy some of the fruits of victory.

What these may be is already envisioned by the protectionists. They are thinking and talking in terms of jeeps, halftracks, helicopters and even light tanks. They are thinking, too, of technicians trained by the Army Signal Corps, by Army engineers, or as paratroopers. And they are making mental blueprints of new tactics designed to blitz the forest's greatest enemy, fire, into submission.

They use radio today, but they know that radio manufacturers are building the best equipment in the world for our armed services. This means that almost every problem in the field of radio has to be met and overcome by research and experiment. Foresters expect and without question will have better shortwave radios after the war.

What is particularly needed by forest

The jeep, pride of the Army, may become the forest protectionist's pack mule of the future

FIGHTING AFTER THE WAR

Can Jeeps, Tanks, Halftracks, Helicopters and Other War-Born Machines Be Used to Blitz the Forest's Greatest Enemy—Fire?

fire control men is a better lightweight shortwave set with a portable aerial ready for instant use. It would need greater range than the walkie-talkie, yet be small, light and compact enough to be carried by one man in rough country. It should have a low band or two bands so that communications could be maintained with similar small sets and with various large sets at base fire camps and at strategic locations.

Picture the advantage of such a set when used in scouting the flanks and head of a large fire. Every significant factor the scout finds could be reported to the fire boss immediately. The same would be true of a division boss who, on inspecting a division of the fire, finds that the strategy must be changed. He could order the change without delay and direct his sector bosses and crew bosses as the circumstances demanded from any point on the division to prevent fire line breaks and other dangers where time and coordination of effort are the important agents. Fewer mistakes will be made and few acres burned on big fires when an improved lightweight radio set is available.

Next the jeep. This small, tough vehicle may well become the saddle horse and pack mule of the future in the protection of millions of acres of forest land. There are entire forests and many districts within others where a forester using a jeep could drive any place the job demanded with a sizable load—places that he cannot now reach with a light truck.

The halftrack might be the answer to the need for mobile power for hauling heavier loads in the rougher and more difficult forest areas. The midget bulldozer with a three or four-foot blade, which the Army is now using, might prove to be an important machine for building fire lines as well as protection trails.

Fire control men even discuss the possibility of using light tanks. Recently a group of these men talked over the possibility of mounting a water tank and pump on the rear of a tank and a bulldozer blade on the front. In this way, they believe, fire lines could be constructed with the blade while the water could be used to help control and hold the fire.

The helicopter can land and take off in any small clearing. Imagine what this may mean to the forest fire-fighters!

It is not likely that tanks with heavy armor plate designed for war would be adaptable to fire line construction or water transportation. Nevertheless, it is possible that some similar machine designed and tested for fire fighting in rough country may be feasible in the not distant future. Caterpillar tractors with trail building blades in front have been extensively used in fire line construction for many years, but the protection which a tank would give the operator might enable him to fight fire with greater success.

The airplane no doubt will play a more important part in forest protection after the war. Cargo planes for several decades have been used for transporting fire fighters and for freighting and dropping supplies and equipment on the fire line. The design of planes for military purposes has emphasized speed, maneuverability, armor, range and carrying power. But when the war is over there will be planes to meet the demands of industry and pleasure. There will be giant airliners for passenger service, flying boxcars for freight and small light planes with both sufficient speed and range for pleasure and other uses. Then there will be the almost foolproof helicopter. This may become the most popular type of aircraft. It has been laughed at and called the flying windmill, but it may well be ideal for use in the forest.

Any small clearing that is fairly level, even a mountain top, would be suitable for a helicopter landing and takeoff. No runways are necessary since the helicopter can descend straight down or rise vertically from the ground. It can also fly backward and sideways as well as forward, and, just as important to the forester, remain almost stationary in the air. Imagine what such a machine could mean in fire suppression! A load of fire fighters could be quickly ferried in and set down near the blaze to take initial action. Then, if needed, re-enforcements, food, water and tools could follow.

This is not a dream. The helicopter is a reality, and all it needs for fire con-

trol use in the forests is a little more development, which should not be a difficult matter when the war is over.

As to manpower, there should be a considerable number of excellently trained technicians from the Army Signal Corps available to man and improve the communication systems in federal and state forests. This should be particularly true in the field of radio, and may mean that many of the hard-to-maintain telephone lines in inaccessible mountainous areas will be replaced by radio systems.

Trained men from the paratroops could be added to forest protection forces as smoke jumpers. This rapid method of attack should be extended to every forest which has remote areas of high inflammability. Hours, in some cases days, can be cut from the elapsed time between discovery and attack on the fire by the use of fire-fighting parachutists, or smoke jumpers.

The United States Forest Service gathered much valuable basic knowledge in training smoke jumpers. This was given the Army Air Corps months before this nation entered the war. When it is over, the Army will be in a position to return this a hundred-fold with a wealth of information on equipment and training.

Many war-trained pilots will also be available to lend their skill in the air to help fight the red menace of the timberlands and watersheds. Also, they could be used to seed burned-over areas. Men trained by Army engineers would be invaluable in constructing and maintaining roads and trails so essential in forest fire protection. Army trained cooks would be a real asset around fire and construction camps.

The veterans organization, whether it will be known as the American Legion or by some other name, should be an important aid to forest protection and conservation in general when the war is over. A huge organization, it will have a strong voice in national affairs and, as the American Legion has always been, it will be aggressive. In its ranks will be a great number of former Civilian Conservation Corps enrollees. They know a great deal about forestry and forest protection, particularly the need for greater public effort in the prevention of fires. The veterans organization, therefore, could be a truly great asset in the continuing campaign to stop at their source all man-caused forest fires, or more than eighty percent of those occurring in the nation each year.

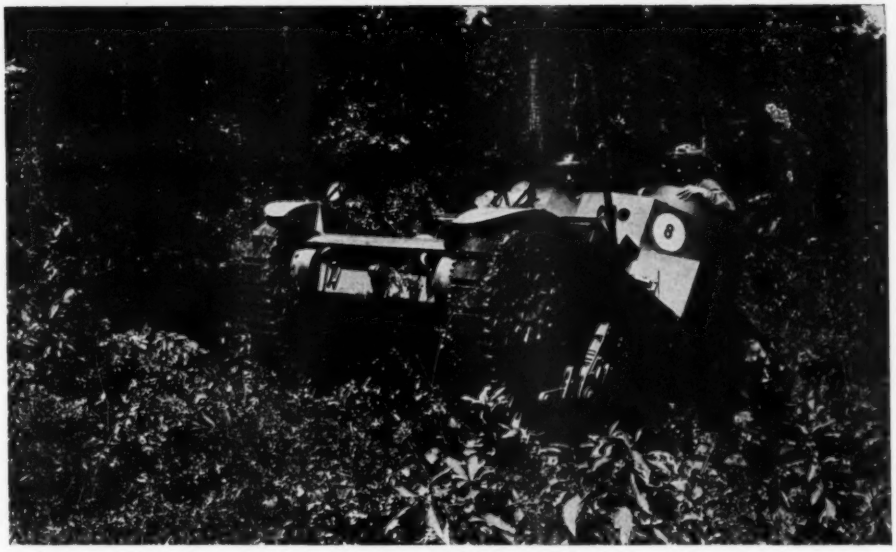
There are, roughly, more than six hundred million acres of forest land in the United States. This includes all kinds and conditions of forests, ranging from virgin forest to cutover and burned over lands. The contributions of these vast timberlands to the economic and social structures of pre-war America are well known. Their importance to the war effort is so great that not many as yet fully realize its magnitude.

It has been said, for instance, and unquestionably it is true, that our great mechanized Navy is as dependent on wood as were the frigates of John Paul Jones. For the current year, the Navy, Army, Maritime Commission and Lease Lend will require more than six and a half billion board feet of timber; eleven billion feet will be needed for shipping containers. These critical requirements represent more than half of the thirty-two billion feet that must be taken from America's timberlands this year.

This great drain, essential as it is, will nevertheless leave its mark in the far-flung timberlands of the nation. To what extent the average citizen will be affected —or how—cannot be determined until a more accurate appraisal of the situation is made. But one thing looms as certain: Our timber economy can no longer tolerate the great and tragic wastes of former years. No one knows the measure of wood requirements for the peace task of reconstruction, at home or abroad. That they will be great is not to be doubted—perhaps greater, in some respects, than the demands of war.

Common sense, therefore, dictates that our forest resources be given adequate and continuous protection—that every waste be eliminated. The first step in this direction is to reduce to the very minimum the timberland areas swept by fire each year. Every idea and every machine which show promise of accomplishing this should be and no doubt will be studied and tested.

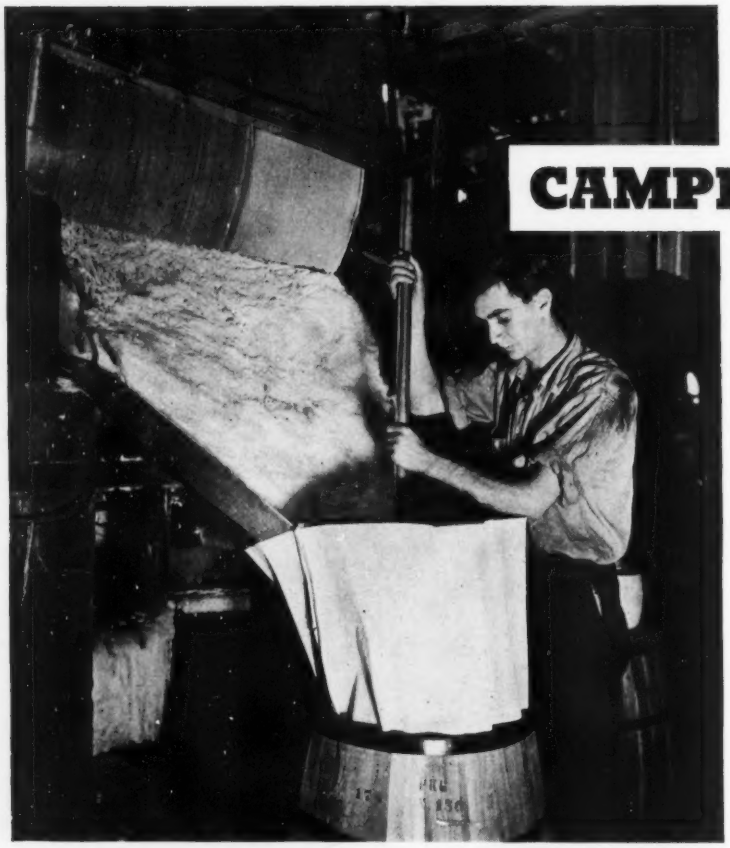
War trained technicians may bring to the forest fronts a greatly improved system of communications



The tank may develop into a deadly weapon against forest fire. Hauling a water tank and pump ready for action, bulldozer blades on front would plow up fire lines

The answer to the fire-fighter's need for mobile power for hauling heavy loads in rough and difficult forest areas may be the Army's halftrack

Tractor trains, used with success by the Army in Alaska, may help solve the supply problem on fires where a large number of men and considerable equipment are needed



The synthetic product—equal in value to natural camphor

CAMPHOR from PINES

Synthetic Product from Turpentine Is Solving a Wartime Shortage

By SIGMUND SAMETH

ON a laboratory bench in the U. S. Bureau of Standards at Washington lay two small cakes of a waxy, water-white substance. They were identical in appearance, weight, color, scent and chemical properties. One was natural gum camphor from the Japanese island of Formosa. The other was strictly American made. It had been produced synthetically from turpentine obtained from long-leaf and slash pines of our own Southland, or from the stumps of such trees. And therein lies a story of how Yankee ingenuity made one wood product do the work of another and thereby solved a wartime shortage of a critical material.

The story began in 1421 when the Chinese discovered the magnificent camphor laurel trees, *Cinnamonum camphora,* on the island of Formosa. Their balmy scent filled the island air and drifted far out to sea. The Chinese quickly became aware of the medicinal value of camphor gum which provided the odor. They chopped the wood into thin slices and put it through a simple distillation process to extract the volatile principle. Crude bamboo tubes were used to condense the snow-white crystals which were then pressed into cakes to serve as amulets and insure health for their wearers. Traders carried some of these trinkets home with them. Later, by caravan route over the desert, camphor was introduced to the turbaned rulers of India. Then the Arabs, ardent experimenters, used it for medicinal purposes and sold it to the Turks. Eventually, the camphor trade became worldwide.

A Formosan chipping camphor trees by hand for his Jap overlords

Chinese war-lords who annexed Formosa were diligent in developing their camphor monopoly. While the trees were then relatively numerous, each one was extremely valuable. The owner of a large tree counted himself a rich man. When the trees became less numerous, they were often owned by partnerships. There are records of single trees owned by as many as 1,200 Chinese. A government permit was necessary before the tree could be cut and heavy penalties were imposed on those who attempted to "bootleg" camphor by cutting illegally or by selling to traders who did not comply with the conditions of the government monopoly. In a single year—1720—records show that 2,000 Chinese were decapitated for violating camphor laws.

The camphor supply remained equal to the demand until the last years of the nineteenth century when an American, John Hyatt, mixed camphor with nitrated cotton cellulose and produced celluloid, the first plastic. One of his pioneering work came a whole new industry—the manufacture of plastics.

This discovery made camphor an industrial as well as a medicinal product. America now uses well over 5,000,000 pounds a year. Its use in plastic products alone makes it vital to the war. Such products include photographic films for the Army and Navy, heavier

transparent plastic sheets used as windshields in motorcycles and certain types of airplanes. Thinner sheets go into identification tags and buttons. Those plastics which depend on camphor are also used in gauge covers, drafting instruments, eye-glass frames, slide rules, radio parts, and even shoelace tips. It still has its original medical uses in many pharmaceutical preparations as a circulatory and respiratory stimulant, a nerve sedative, a carminative, an antispasmodic and an anti-pruritic.

Formosa passed under Japanese domination as a result of the Sino-Japanese War of 1895. The camphor tree grows commercially only in Formosa, so Japan acquired a world monopoly. The Japs set up huge distillation plants and refineries. The Formosan workman chipping away at a block of camphor wood was replaced by machines which shredded a whole camphor log to prepare it for the retorts. Mr. Moto was out for big profits. By 1941 camphor had skyrocketed to *fifth* in importance on his export list.

Japan could let the world have as much camphor as she liked or as little, and there was nothing to be done about it. In fact, the Japanese used to purposely squeeze Americans now and then. In 1918—another year when we were at war—Japanese refined camphor cost us $7,500 a ton. Manufacturers were forced to buy on an allotment basis. Never could they secure more than a ninety-day supply nor know the price of their next allotment. Camphor sold at whatever price the seller named. The World War price was maintained even after 1918. However, as attempts were made to produce elsewhere, the Japs lowered their prices so drastically that the competitive product was driven from the market. From $7,500 a ton, the Japs dropped their price to $695 when the first synthetic camphor appeared.

Attempts to grow camphor in America date back to 1880 when our federal government imported camphor berries and young trees for planting in Florida, Louisiana and elsewhere in the South. They flourished and many are still growing. They are magnificent shade trees, yet they do not solve the camphor shortage because we lack the cheap coolie labor to exploit them. This is also true in California where there are probably 15,000 camphor shade trees.

Near Waller, Florida, an American plastics manufacturer in 1913 started a 12,000-acre camphor farm. Instead of cutting the trees down, his idea was to grow them in hedgerows and trim only the branches for distillation. The project was actually begun, yet despite the progressive attitude towards camphor trees as a continuous crop, it had to be abandoned after a few years. The Japanese merely manipulated prices a bit.

The chemical formula of camphor is $C_{10}H_{16}O$. Wouldn't it be possible, the

(*Turn to page* 510)

American made camphor is obtained from the turpentine of longleaf and slash pines, or from their stumps. Thus one wood product is made to do the work of another in solving a critical wartime problem

Magnificent WATERS

By JOHN L. BLACKFORD

Western gull

THE BATTLE FOR AMERICA is not new—not to those who have long struggled to preserve and protect its glorious natural heritage. Yet the fact that Americans are today dying on distant battlefields, primarily to hold this great land for us, again sanctifies the task of conservationists.

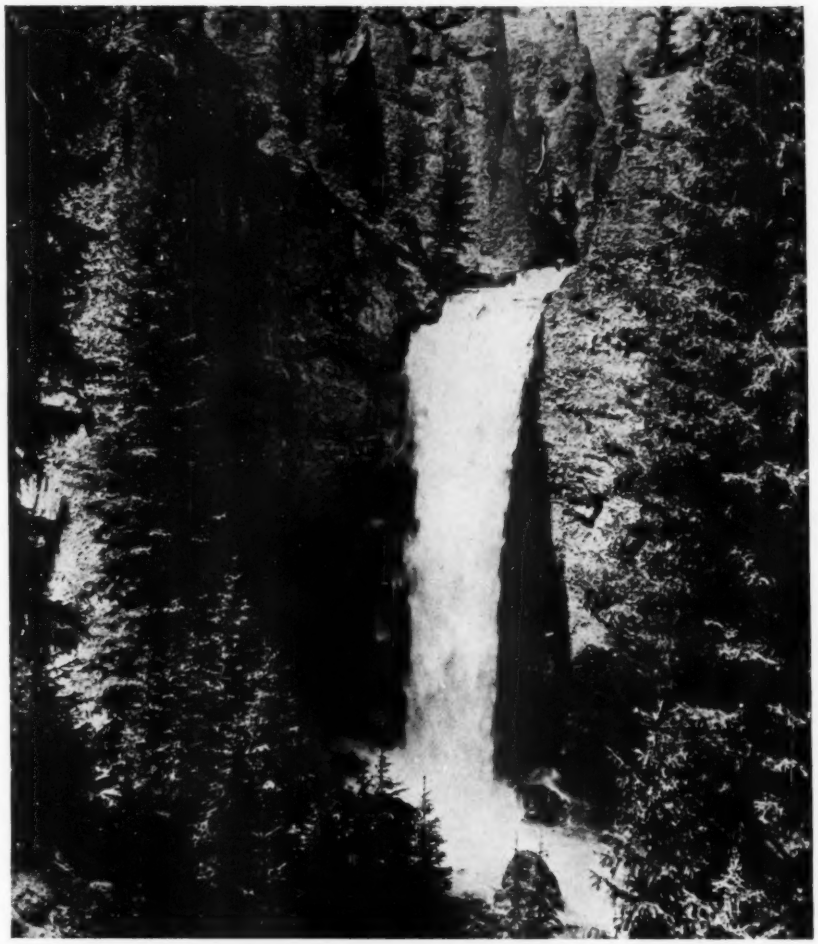
In the emergencies and haste of war, our forests and our fields will suffer. We can allay these wounds somewhat by our endeavor to exercise judgment with our haste. Yet, in this hour of unpreventable wastage, we can and must determine that needless and heedless destruction of our resources, so prevalent during peacetime, shall not continue unchecked when the war is ended.

We owe this to our fighting forces. It must become our firm resolution that this entire land shall be restored and kept a worthy monument to the sacrifices they are making.

Of our superb national wealth, there is no more inspiring example than our magnificent waters. Yet we have witnessed the ruinous pollution of rivers, lakes and harbors; the prodigal waste of watersheds, the reckless draining of marshes, and the lowering of precious ground-water levels.

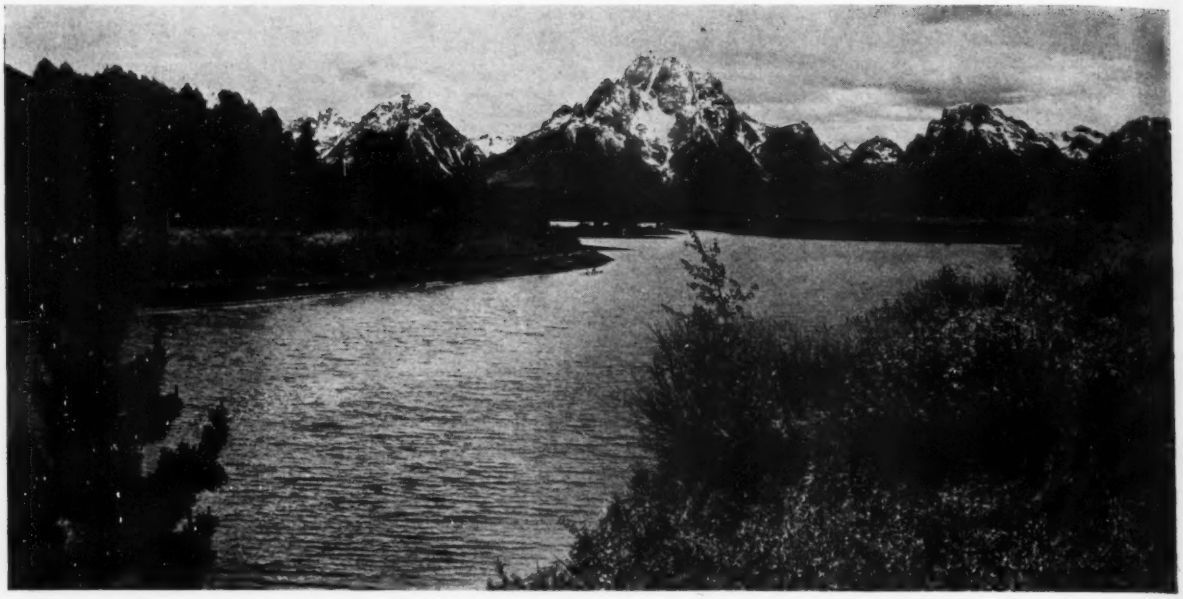
A nation's natural resources are the most essential material capital its people possesses. Intelligent use of that capital demands awareness and consideration of all values, and wanton destruction of none. Pollution of our inland and offshore waters is classic among those destructive and heedless practices that go unabated. It is a practice that must be increasingly rectified as a victorious nation turns from the tasks of war. It is just as important to look ahead to a better America as it is to envision a better world.

Our dauntless defenders will hold America for us. They will save the lives, liberties and opportunities of our people. But only the people themselves, learning a deeper respect for created things, can preserve the future of this land—a future so inevitably dependent upon the health of America's soil, of her forests, and of these, her magnificent waters—



Plunging spume and gossamer mist-veils give thrilling beauty to Tower Falls in Yellowstone National Park, Wyoming. To utilize economic possibilities, yet keep inviolate the inspirational and recreational values of innumerable other streams, is a resource problem demanding early solution

The pine-topped sea walls and cobalt waters of Carmel Bay, do much to make California's seaside one that is beloved by Americans. Yet after the menace of the Jap to our Pacific shores has been eliminated, the insidious menace of offshore pollution to this and all our coasts will remain



Sinuous Snake River, above, leaves a region of scenic grandeur at the foot of the Tetons in Wyoming to enter upon a long course of varied services to man. The influence of any great river upon all life within its drainage basin is so fundamental that no major utilization of its waters ever should be undertaken without scientific study and investigation. Below, typical of the great wilderness lakes, the pristine magnificence of which is swiftly departing for lack of wider understanding of their many irretrievable values, are the alluring waters of Middle Thompson Lake in Montana

An inspirational heritage preserved for her people by Canada is Vermillion Lake in Banff National Park, here shown mirroring the cloud-bannered summit of Mt. Rundle

Morraine Lake nestles below the famous Ten Peaks in the Canadian Rockies. Faultlessly pure where they rise, rivers suffer constant defilement on their way to the ocean

COLLINS ALMANOR FOREST

First cutting in this sustained yield operation removes only large, overmature, decadent, or defective trees

Powerful tractors are employed to drag the logs out of the woods to a permanent system of truck roads

An Example of What Can Be Done in Private Forestry When Permanence is the Keynote

By CHAPIN D. FOSTER

A DREAM of childhood is taking shape in north central California in the form of a highly constructive forestry operation on a sustained-yield basis. Truman W. Collins, president of the Collins Pine Company of Portland, Oregon, is the man who visioned a new type of forest operation. Collins Almanor Forest near Chester, on the summit of the Sierra, is on the way to its realization. Truman is the son of the late E. S. Collins, who, like his father before him, was a successful Pennsylvania timberman. They migrated to the West in the seventies and made heavy timber investments in the three coast states.

Young Collins was raised in the family tradition. The stories of Paul Bunyan were as familiar to him as Mother Goose rhymes. He knew all about bull cooks, whistlepunks, powder monkeys, oxen, high climbers, buckers, and fallers. There is no phase of the timber industry with which he was not familiar when, with the passing of his father a few years ago, he became operating head of one of the largest individual timber operations in the West.

Truman Collins dreamed of a timber operation based on a forest property on which trees would be both grown and harvested in such a relation that the supply would be perpetual and would support a community where jobs would be permanent. His inheritance and training told him that there were many business and technical problems to be solved in order to do this, and not being just a dreamer, he proceeded to solve them on the basis of facts and figures.

Here are some of them: The Collins Almanor Forest covers 70,000 acres and contains a billion board feet of timber, one-third of which is ponderosa pine, one-third sugar pine, one-fifth Douglas fir, and the balance white fir and cedar. The annual growth rate averages 250

board feet an acre. The soil is good (Site II, to use the foresters' rating scale), much better on the western than on the eastern slope of the Sierra, but not up to the lower coastal areas. Fire and disease hazards are low, and partly controllable by logging practices. There is a little white pine blister rust.

The company owns a railway which connects its mill with the main line railroads. A double band mill embodies the latest types of equipment. Year-round operation is possible, living conditions are good—a factor of importance in holding a satisfied and efficient operating force. Costs of operations are average for the region. The company is adequately financed—something very important in a long-range enterprise such as forestry. Another favorable factor is that there is a 30,000-acre tract of government timber nearby from which the company hopes to purchase added stumpage.

Two years of intensive study by the company's forestry staff, plus those of other experts, were required before Truman Collins was certain that despite the large investment involved the sustained yield project was technically and economically sound.

In the forest, the forestry and logging staffs work in close cooperation both in the planning and in the executing of operations. It is not a case of the loggers taking what they want and leaving the foresters to try and make something grow out of what is left. The foresters mark the trees that are to be cut. They do this with knowledge of logging and milling requirements as well as with an eye to future growth. The loggers remove the trees with minimum damage to those destined to grow for the next crop.

All cuttings are made under the selection system, using a flexible diameter limit adjusted to a combination of forest and market conditions. Most trees under fifty inches in diameter at breast height are left for a second cut, except occasional "high-risk trees," that is, those which are in danger of being lost for any reason before the next cutting. Trees of especially high value may now and then be cut even if they are under the flexible limit, to reduce the investment in mature stumpage.

It is also the policy not to remove more than one-third of the trees on any one area at one time. In smaller-sized stands considerable raising of the limit is required in order to maintain a forest cover and leave the smaller and better trees to grow after both the larger and the defective ones have been removed. The average cut is about 5,000 board feet to the acre. On the basis of a thousand feet of logs removed, both J. R. McDonald, the logging superintendent, and Waller H. Reed, the company's resident forester, agree that except for investment in roads this form of selective logging costs no more than clear-cutting as practiced under the old system.

Operations are highly mechanized. Cut by power saws, these big timbers are efficiently handled by a loader

It is expected that the timber left after each cutting will grow fast enough so that it will be possible to return for another cut on the same area in fifteen years. Or, to use the forester's phrase-

Trucking to the mill. The idea on this operation is good equipment, good roads and a perpetual log supply

The log storage pond at the Collins Pine Company's sawmill assures continuous, year-round operation

ology, "operations are on a fifteen-year cutting cycle." It is expected that eventually a perpetual annual cut of 25,000,000 feet will be possible.

In logging operations power saws are used for felling. Three-man crews do the job. Logs are skidded out of the woods with tractors and trucked to the mill over graded gravel highway of the company's own construction.

Efficient fire protection has marked the two years of woods operation. Few fires have started and losses from these have been negligible. Logging crews have been trained in fire-fighting. The company has two tank trucks, 7,500 feet of one and a half-inch fire hose, portable pumps, a fire truck and trailer. When there is a fire call, a small bulldozer is loaded onto the trailer and, instead of proceeding at customary leisurely bulldozer pace, that efficient fire-fighting equipment rides at high speed to the scene of the fire, saving many valuable minutes.

Utilization is close. The sawmill has no waste burner. There is no waste. Sawdust and shavings are being turned into power for use in operating the mill. Should there be any surplus of power, it can readily be sold. Some material which would normally be waste is converted into box boards or fuel.

You can't tell young Collins anything about the old type of logging town. He knows all about it. But, just as other boys have visioned better ways of doing certain things with machinery, Collins believed there was a better way to do things with lives. Collins Almanor Forest will, therefore, have a normal, healthy, up-to-date American community with everything that goes with it. The Collins philosophy is that by developing a permanent timber operation, a permanent community in which workers live normal lives becomes possible.

Start out with a five-acre park among the pines. Add to this a group of company houses of modern design laid out around the park—houses designed for family units and that would fit into any up-to-date community. Add modern school and church facilities. Add also recreational facilities to include a playground and equipment, a swimming pool, a ball diamond and tennis courts.

Part of this community development has been completed. Some of the company homes and a guest house are occupied. Completion of the remainder must await the war's end.

Let George C. Flanagan, a graduate of the College of Forestry at the University of Washington, who is the company's chief forester, sum it all up:

"The Collins Almanor Forest is one example of what can be done in private forestry. The selective cutting and sustained yield program being followed will insure a continuous supply of timber adequate for operating the mill efficiently. The combination of advanced forestry ideas with sound business principles, good equipment and a first class operating organization, assures the success of this enterprise. We know that our employees and their families will appreciate living and working with us. The oldtime lumber town may have had its romantic aspects but it was no place in which to raise a family."

Collins philosophy in building a permanent logging community includes company housing in a park-like setting

Canada goose on the restored marshes of the Seney Refuge

WILDLIFE RETURNS TO SENEY

Though Lumberjacks Cleared It and Promoters Drained It, Wildlife Is Being Restored in Michigan's Upper Peninsula

By HOWARD ZAHNISER

THE old pine, an ancient landmark for hunters and trappers in Michigan's Schoolcraft County, had just fallen. Harvey Saunders, who felled it, had carried his ax and saw across the old woods road to the shack that housed tools for the WPA crew he was bossing.

It was the same shack Saunders had used in 1929 when he cut the last logs ever sent down the Manistique River, and as he talked he found it easy to be reminiscent. It was just as easy to listen to him as he testified to the devious history of this famous old lumbering region of Michigan's Upper Peninsula.

Fifty years ago the scene of the lumberjack's rip-roaring ex-

Harvey Saunders, veteran lumberman and pioneer of Michigan's Upper Peninsula

cesses, today the Seney National Wildlife Refuge, this area has been handled again and again by men with varying purposes — pioneers, lumbermen, land agents, promoters, drainage crews, would-be farmers, and finally wildlife refuge builders. Saunders had seen them all, and as I talked with him it seemed that the refuge took on a more vivid significance. The Seney refuge was more than an interesting sanctuary. It was a demonstration of the great trial and error struggle that Americans have had with the land.

When Saunders came to this region at the turn of the century settlements were relatively new, dating back only to the spring days of 1881 when Eze-

CCC wildlife crews helped Michigan's Conservation Department sein pools of the marshes for predatory pike, and transport them to favored fishing grounds in the area

kiel Ackley set up a homestead not far from the present refuge headquarters. Other pioneers followed. Log cabins dotted the landscape, and small clearings for gardens, along with the abundant wildlife in the lakes, forests, and marshes, provided a good food supply.

Yet young Saunders was probably more impressed by the tales of excesses at the nearby town of Seney which, from 1882 to 1894, had the reputation of being the toughest town in Michigan. Leon Czolgosz, a section hand who assassinated President McKinley, was one of its famous characters. By 1894 the adjacent forests had been cut, and the town, almost swept away by a forest fire, became another of the Peninsula logging communities maintained by lumbermen like Saunders.

As the timber fell, the land lost its value and the boom days became memories. Time limped along until 1910, when once again there was a stirring in Schoolcraft County. Only the land and its wild creatures had been left by the lumbermen, but this was enough for the land agents and promoters. The money of far-away investors built a new Seney. Drainage was its slogan, drainage of the famous Seney marshes for the uses of agriculture.

The promoters broadcast the allurements of cheap land. And the would-be farmers came, tried, and failed. The peat lands of the Seney marshes could not grow farm crops.

On these same lands in 1921, an optimistic cattle venture also failed. And so did an attempt to make money raising muskrats on the marshes. By 1929, just about everyone concerned had concluded that only wild mammals and birds would ever make a go of it on the Seney marshes. Talk of the good old wildlife days became common, and by 1935 the Seney National Wildlife Refuge was under way to restore those days.

In the half dozen years between the refuge beginnings and my visit with Harvey Saunders, the sanctuary had been so developed that it was attractive to wildlife—a refuge in fact as well as in name. Under the direction of Clarence S. Johnson, it was already being managed for crops, timber salvage, and muskrat-pelt profits, as well as for general wildlife production and protection. Today the refuge embraces 92,000 acres, including land in process of acquisition.

During my visit there in 1941, I was shown some of the results of six years of work. First, there were the restored marshes and the man-made pools that provided water for them. The old drainage ditches had been destroyed. In their place, impoundments held back the waters and flooded the marshes. Fourteen pools had been completed, another was under way, and four more were planned. These would increase the refuge's water area to an estimated 25,000 acres.

While the engineering works were the key to the Seney development, the wild creatures making use of the refuge proved more interesting. Waterfowl on the pools, prairie chickens booming in the uplands, sandhill cranes, great blue herons and a flock of snow geese flying overhead made me constantly aware that I was in a wildlife sanctuary. Beavers

Muskrats have stolen the show on Seney, since refuge developments have so improved the character of the marshes, and trapping, under supervision, is bringing good returns

One unit of the restored marshes, showing the home of Refuge Manager Clarence S. Johnson, who is administering the area for crops, timber salvage and muskrat pelt profit, as well as for wildlife protection and production

were sitting on the bank of Pine Creek and another was swimming from the mainland to an island in one of the pools. Refuge Manager Johnson estimated that at least several hundred were on the refuge.

Two or three family groups of black bears were also on the refuge, along with approximately 2,500 deer. Returning from the abandoned buildings of one of the old-time ranches, I counted nineteen whitetails in the bright moonlight.

Not content to wait for the natural repopulation of this area, the refuge experts had accomplished one piece of colonizing that proved particularly interesting. This began in 1936 when Henry M. Wallace, of Detroit, donated 320 wing-clipped Canada geese from his International Migratory Bird Refuge near Highland, Michigan. Placed on the Seney refuge, where a special area was set aside for them, these wild but wing-clipped geese have been raising young honkers that have the full use of their wings. Refuge officials have hoped that wild geese migrating across the refuge would be attracted by the wing-clipped birds to nest in the area. They have no definite proof that this has happened, although wild fliers were seen on the marshes — offspring of the wing-clipped birds or wild migrants, as the case may have been.

Thus Canada geese were being re-

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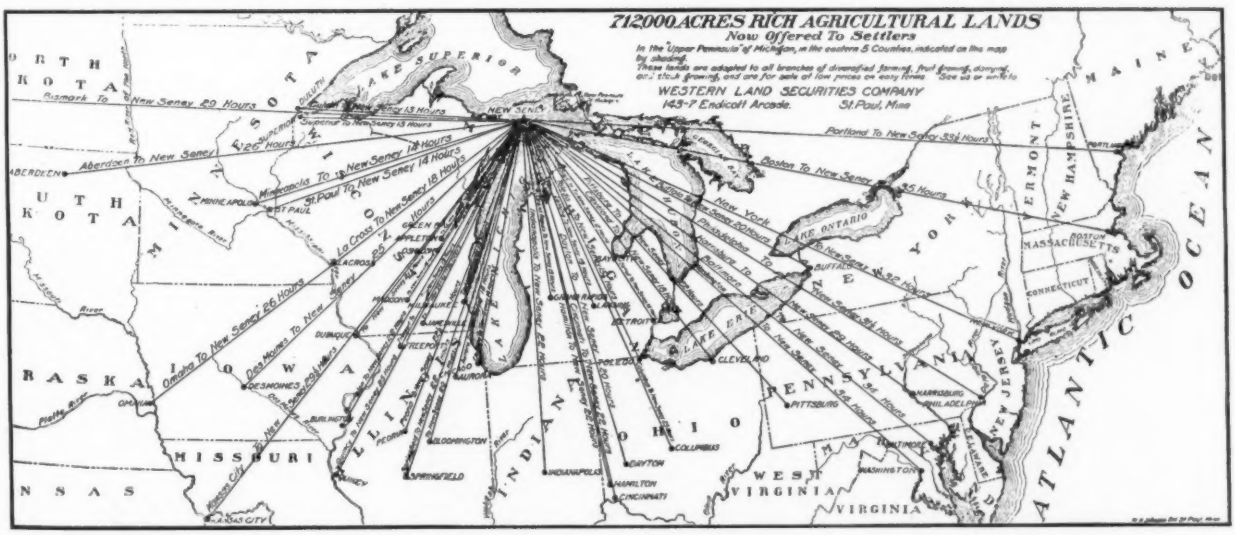

A look back—thirty years ago land agents and promoters used a map that made "New Seney," in the wilds of Michigan's Upper Peninsula, seem the center of the universe!

GIANT OAKS OF COSTA RICA

Along the Inter-American Highway, Newly Discovered "Forest of the Gremlins" May Be World's Largest Single Stand of Oak Timber

By ARTHUR BEVAN

NINE degrees of latitude north of the Equator—the same latitude that runs through the Panama Canal—and here we were walking through what is perhaps the largest single stand of oak timber in the world. If that surprises you, you are in good company. The foresters in our party were amazed. It simply couldn't be true.

But there was no mistake about it. Here, in tropical Costa Rica, more than a mile above sea level, along the pioneer road for the Inter-American Highway, about fifty miles from the capital city of San Jose, was the most remarkable oak forest any member of our party had ever seen. Magnificent giants 125 feet or more tall, heavily buttressed at their base to a height of ten or twelve feet, and with diameters above the buttresses of from seven to eight feet. Here were trees to excite the imagination, a whole forest of them, for in a region where pure stands of any one species are exceptional the stand was at least ninety-five percent oak, with only a few lauraceous species in mixture.

Mystery pervades the "Forest of the Gremlins" — ghostly giant oaks, bathed with clouds most of the year

To add to our awe, clouds swirled through the trees giving the whole setting a ghostly appearance. Water was almost constantly dripping from the limbs and masses of air plants, and one almost expected to see witches on broom sticks and large bats flying out of the timber. This was because the mountain slopes on which the giant oaks grew were bathed with clouds most of the year. We immediately dubbed the forest "The Ancestral Home of the Gremlins." And well it might be, because anything more other-worldly than this unique stand of timber could hardly be imagined.

Oak forests are not uncommon in the American tropics. In fact, above an elevation of 3,000 feet one is constantly running into oaks mixed in the stands, some species of which are known, many others unknown. The giant oaks on this Costa Rica mountainside fell in the latter category. None among us was able to classify them. Eventually, this was done by Dr. Paul C. Standley of the Chicago Museum of Natural History, an outstanding authority on tropical flora, who identified the great oaks as *Quercus copeyensis*, a species which is apparently endemic. It belongs to the white oak group, the wood having conspicuously large medullary rays. The heartwood is light brown; the white sapwood measures from one to one and a half inches in thickness regardless of the diameter of the tree. The wood is heavier and stronger than our own white oak.

There are at least thirty square miles of this timber in the area we investigated along the right-of-way for the highway, which follows the crest of a divide for a distance of fifteen miles within the for-

est itself. How much to the south beyond this point the forest continues has not as yet been determined, but air-reconnaissance would indicate that it is of considerable extent. It is quite possible that the total stand might approach a hundred square miles—an enormous supply of oak timber, perhaps the largest pure stand in the world.

The most striking feature of the trees is the long sheer bole before the first limbs branch off — about eighty feet above the ground. The trunk tapers but slightly. One sample tree that was cut down measured thirty-one inches at the butt and twenty inches outside the bark at the first limb. The trees are very straight, only a few showing external evidence of spiral grain.

Estimates from a few circular sample plots indicate that the heaviest stands will run as high as 60,000 board feet an acre. In fact, an estimate of from 20,000 to 25,000 board feet an acre for the entire stand is conservative.

The mountain soils on which these oaks grow are composed of volcanic ash of enormous depth. From the pure stand at 7,000 feet elevation, the forest extends upward to the open *paramos*, the exposed windswept mountain slopes found in this latitude at 11,000 feet elevation. Ecologists believe the *paramos* are mainly caused by the sweep of the trade winds which blow constantly on exposed slopes and reach velocities of from fifty to sixty miles an hour.

The slopes of the mountains are bathed with clouds most of the year, so that the forest can be classified as a "cloud forest" type. The trees have relatively small crowns laden with epiphytes —air plants growing on other plants but not as parasites. They are principally bromeliads, mosses and lichens. As would be expected in a dense forest with a complete crown cover to exclude sunlight, ground cover and low vegetation are not heavy, consisting mainly of ferns and low brush. Occasionally, however, there are deep impenetrable thickets of trailing or climbing bamboo. A few openings caused no doubt by wind storms are choked with dense underbrush and second growth of other species, with little reproduction of oak.

How could such a forest exist only fifty miles from the capital city of San Jose, which has been inhabited for hundreds of years, and still be unknown and unreported? The answer lies in the nature of the vegetation and the people of the tropics. Inhabited areas in tropical America are as a rule densely populated. Radiating out from these centers of population are good roads—that is, they were good when first constructed. Those leading toward the coast to harbors and ports are generally maintained, but elsewhere means of travel rapidly degenerate into oxcart trails and eventually into pack trails. Finally, there are paths that only an Indian can follow.

Vice President Wallace, on his recent visit to South America, with a party of officials exploring the pioneer road for the Inter-American Highway, near the great oak forest

The native sees no reason, except under unusual circumstances, to construct roads or other means of travel which lead nowhere except into the wilderness. Actually, the forests and impenetrable jungles of Costa Rica extend 150 miles into similar country in northern Panama. So, until the start of work on the Inter-American Highway, this oak forest remained undiscovered. This same lack of means of transportation in the tropics largely explains why denudation of forest lands is complete around centers of populations and why forest products are scarce and expensive, even to the lowly charcoal needed for cooking. It also leads to the anomaly of planting programs in areas that are relatively short distances from virgin uncut forests.

Truly, little is known of the forest resources of tropical America. The great land area south of the Rio Grande is two and three-fourths times the size of continental United States, and of this 3,300,000 square miles, an area considerably larger than that of our own coun-

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One of the giants—buttressed base and sheer bole. The first limbs branch eighty feet above the ground

PACIFIC NORTHWEST ON GUARD

Thousands of Fire Fighters Man Their Forest Battle Stations

By ARTHUR W. PRIAULX

WILL Japan attempt to fire our forest lands again?

This question, throughout the summer, has been uppermost in the minds of nearly three million Americans who live in the timbered regions of Oregon and Washington. Twice last year submarines fired into shore installations. Twice Jap planes, launched from submarines, made abortive efforts to fire the dry and highly vulnerable forest lands of southern Oregon.

In the Pacific Northwest, the nation's great storehouse of virgin timber stretches in a wide band five hundred miles along the coast. In summer these forests are dry. Fires start easily. The Japs know this, because logging camps throughout the region once employed Japanese. Until late October in the tinder-dry forests, from which now roll billions of feet of logs for war uses, fires can be started almost by snapping your fingers.

This danger period in the great Douglas fir region coincides with the time some authorities believe an attempt may be made by Jap forces to invade our mainland. Residents of Oregon and Washington discount the invasion in force theory now that the Japs have been driven out of the Aleutians. Nevertheless, they believe our forests offer a target the Japs will not overlook.

This threat is not just idle talk. The "underground" in Japanese war relocation centers hints at such an attack. Kilsoo K. Haan, Korean National Front leader, who called the turn on the sneak assault on Pearl Harbor, says that certain Japs have been told of attack plans by Premier Tojo.

Whether true or false, civilian authorities, especially those men charged with the protection of the Northwest's vast forest empire, have not taken these warnings lightly. As a result, the greatest fire-fighting organization in the world has been organized and outfitted in Washington and Oregon. It is ready for Tojo and his minions.

This civilian army is set up like a military machine. In Oregon it is headed by Nelson S. Rogers, state forester. Under his immediate command are all trained forest protection organizations of the state, and private as well as U. S. Forest Service personnel. An identical organization is set up in Washington with T. S. Goodyear, state forester, in charge. The two organizations have so coordinated their plans that all men and equipment of both states are available in the event of an emergency in either state. Governors Earl Snell of Oregon and Arthur B. Langlie of Washington have taken the lead in bringing together this vast fire-fighting organization. On June 11, under dramatic and historic conditions, they met on the interstate bridge connecting Portland and Vancouver and pledged every resource at their command.

Here is the way the Pacific Northwest is organized to meet Tojo's threat to its timber empire: In the event of an attack on the forests, the first to go into action will be a shock force composed of five thousand trained fire fighters, para-fire-troopers, lookouts, and radio men. They will be modernly equipped with radio, scientic devices for locating fires, and fast pumper trucks.

First line of reserves are 35,000 loggers in camps located in almost every timbered area the entire length of the coast. These loggers are hardy, tough trained men who know how to fight fire. Also, their heavy equipment—tractors, trucks, bulldozers and fire hose—are subject to call in an emergency.

Just as depth in reserves is essential to the success of a military organization, so it is in fire fighting. Next line of reserves are 13,000 farmers, trained under expert supervision by the state forestry departments. Also subject to call, these men have shovels, hodags, and tractors ready for instant action.

The states of Oregon and Washington have about 3,000,000 inhabitants in the timbered regions which would be Tojo's target in case of attack. These citizens, like their pioneer forefathers, are a hardy, fearless, and aggressive people. The threat of Tojo is in effect a challenge. It has been said that one purpose of an incendiary attack would be the hope of frightening the populace into demanding more army protection on the home front—thus necessitating pulling troops away from foreign fighting fronts. But Tojo's planners may as well recognize the futility of such a hope. Americans do not react that way, as these westerners are ready to demonstrate.

When the Japs tried to set fire to their forests last summer it made the Northwest people mad. Down in Tillamook County, along the coast just south of the mouth of the Columbia river in Oregon, 1500 loggers, farmers and outdoorsmen formed the now famous Tillamook Guerrilla Band. These men decided that even if they couldn't get in the army, they could give a good account of themselves in case the Japs attempted an invasion. The result: one of the most colorful and dangerous groups of men in America today—for the Japs. These crack-shot guerrillas, who were denied official recognition in the Oregon state guard, indicate the temper of our westerner. They know their coastline like a book and are ready to put up a real battle, along with the regular military forces, if the Japs get within range of their deer guns. More important, they are trained fire fighters, and in this capacity will probably be most valuable in case of a plane attack on our forests.

Farther down the Oregon coast are two other similar bands. At Florence, where the beautiful Siuslaw River reaches the Pacific, the Siuslaw Rifles are trained like the Tillamook band. And at Marshfield on Coos Bay, citizens, not to be outdone by northern neighbors, have formed the Coos Bay Pirates—as tough a band of men as ever walked the earth, they claim.

Oregonians and Washingtonians these past few years have become more and more forest fire conscious. Two statewide publicly-supported organizations, the Keep Oregon Green and Keep Washington Green associations, have conducted one of the most effective fire suppression educational campaigns in the history of the region. Results have been excellent. In Oregon for the past twenty years there has been an average of 1300 man-caused forest blazes annually. Last year there were 350, all small ones. Washington's record is just as good.

If Tojo comes calling this fall on Oregon and Washington, he will find real he-men on the reception committee. His torch may be lit, but they have an idea they know how to put it out.

Editorial

Cooperative Sustained Yield

FEW terms in forestry have been more loosely used and in many ways so little understood as "sustained yield." From the public point of view, its implied scientific complexities and its obvious suggestion of dependence upon certain specific laws of nature and economics have held little imaginative appeal. All too frequently it is looked upon as synonymous with the descriptive phrase "keeping forests continuously productive." And this is unfortunate. In implication and meaning the two are far apart. The sustained yield concept lies at the very base of successful long-range management of both public and private forests.

Consequently, the imagination or even the interest of John Q. Public may well fail to be captured by the title of Senator Charles L. McNary's bill S. 250, which passed the Senate on July 3—"A Bill to Promote Sustained Yield Forest Management, etc." And this, too, is unfortunate. For just as forest historians have recorded the name of Senator McNary as joint author of the Clarke-McNary law, which implemented federal and state cooperation in forest fire protection, so will they recognize his sponsorship of S. 250, should it be enacted into law, as the beginning of another important and possibly more far-reaching field of cooperative endeavor in stabilizing forest production.

Perhaps this will be brought into sharper focus if the meaning of sustained yield can be restated in terms closer to everyday life—the equalizing of production and consumption. Foresters use the term "sustained yield" to describe a form of forest management under which the cutting of a forest is adjusted to its growth, so that approximately the same volume of wood may mature and be harvested yearly or periodically in perpetuity. In other words, growth and cut are in balance in a sustained yield forest.

From a long-range view, growth and harvest in American forests must be balanced just as production and consumption must be equalized in any other industrial enterprise. Failure to do so works hardship on both the producer and consumer. Nevertheless, the attainment of sustained yield forestry is difficult both technically and economically, particularly on small holdings. Most of the forestry practiced by private owners is therefore on a discontinuous-yield basis. That is, yields come at irregular periods — usually spaced many years apart and in unequal amounts. To this type of forestry the phrase "keeping forests continuously productive" properly applies.

This is not said in criticism, as in many circumstances it is the only kind of forestry private owners or even public agencies can possibly practice. The unit of sustained yield must therefore frequently include many individual holdings. To rationalize forestry in the United States, sustained yield units must be organized which are sufficiently large to yield an even and perpetual supply of forest products to feed into the industrial machine. They must sustain local economies and be well distributed throughout all the great forest regions.

The objective of S. 250, as its title indicates, is to facilitate the building up of such units by providing a basis for cooperation between forest owners. As drawn, the bill can do so when there is a considerable area of federally owned land to serve as a nucleus. Around this nucleus, private holdings may be grouped under conditions permitting public timber to be fed into the local industrial machine in such a way that the continuity of operations will remain unbroken.

The basis of the scheme is that the private owners enter into long-term contracts with the government, agreeing to harvest under government regulation which will insure reproduction of the forest. On its part, the government, knowing that individual operators do not have sufficient timber to keep their mills operating perpetually, agrees to sell them enough publicly-owned timber to do so. The whole plan is worked out so that a regular and perpetual supply of timber can be furnished from the sustained yield unit. No compulsion is put on forest owners to join the units, and the procedure of setting them up is democratic. Yet the interests of both the public and private owners are protected.

Carrying the endorsement of both the Secretary of Agriculture and the Secretary of the Interior, the bill provides means for both agencies to cooperate not only with private, but with state and local land-holding units; and where national forests and forest land under the jurisdiction of the Department of the Interior are intermingled, with each other. Should it become law, it is probable that the first units will be located in Oregon in connection with the O and C crazy-quilt of patchwork ownership, involving federal, state, county and private lands.

Rationalizing the growing and harvesting of forest products on a high consumption level is an important task of American forestry and the American forest industries. Passage of the McNary bill, S. 250, will be a big step in this direction. Out of it may well come experience enabling the drafting of legislation, state or federal as the case may be, which will facilitate development of sustained yield units under conditions where public ownership is not dominant. It deserves full and active support.

PLANTING TREES WAS HIS HOBBY . . .

By ELIZABETH FORBES

THE pursuit of a hobby by Dr. Frank Johnson has made Glen Ellyn, Illinois, outstanding because of the beauty of its tree-lined avenues. Prior to his death in 1941, this past president of the Izaak Walton League of America planted trees for nearly half a century. More than 2,000 were carefully planted by him in Glen Ellyn, most of which were raised from seeds sown at his home.

Because of his interest in beautification of the landscape, the honorary title of Village Forester was given to him by his townspeople. He was also an honorary life member and the forester of Glen Oak Country Club, nationally known for the prolific growth of trees lining its fairways.

Always about his office in Chicago were vases and odd-shaped bottles, filled with flowers or interesting plants, often several months ahead of their season. At Christmas it was the usual thing for him to display pussy willows in full bloom.

"Where do you get so many beautiful trees?" I asked him one day.

This question brought a smile to his kindly face. With a slow step he walked across the room and picked up a basket filled with small leaf-like objects, which he placed before me.

"This is next year's crop of maples," he explained, scooping up a handful. "Each one looks like half an airplane propeller, but it is a maple seed. Watch how this one falls to the floor."

He flicked one from the palm of his hand. "Doesn't it spin gracefully?" he asked. "That is Nature at work. The breeze that blows the maple seed off the tree carries it like a glider to its landing field. I make it a rule to pick the strongest of these seeds, and that, I feel, is why I get such beautiful trees."

Dr. Frank Johnson, Illinois conservationist and tree planter

HE WHO PLANTS A TREE

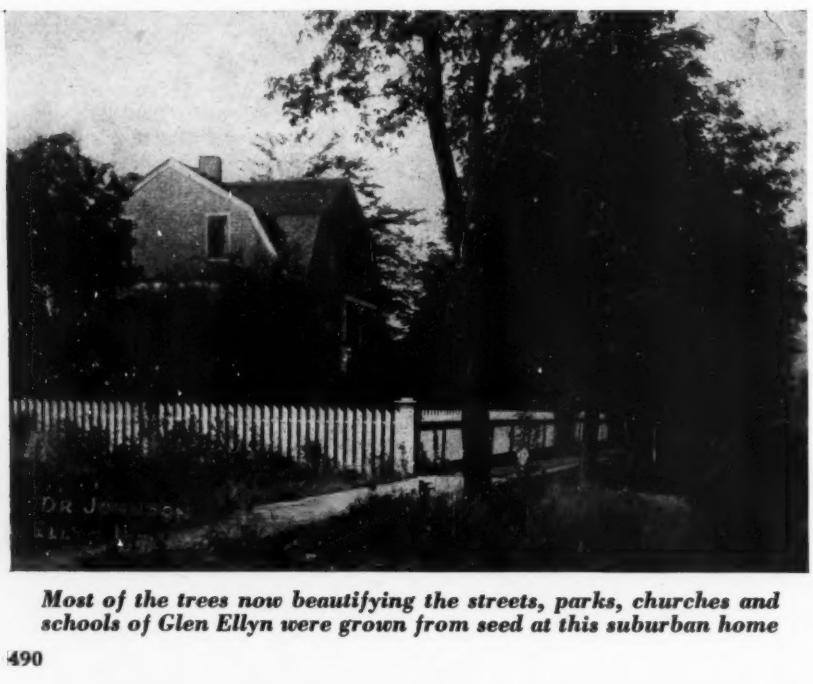
He who plants a living tree,
Plants beauty for posterity;
Beauty which to the beholder
Grows lovelier as it grows older.

Plants in leafy bough, in bole,
Perfection of detail and whole.
Plants for green against a sky
Too bright, too blue, too breathless-high.

For April bloom and autumn fruit
Than which earth has no substitute;
For symbolic strength in grace
Whence despair lifts up its face.

Whence the poet goes for words
Synonymous with wind and birds.
Plants for seed, which shall be
Loveliness perennially.

—Ethel Romig Fuller.



Most of the trees now beautifying the streets, parks, churches and schools of Glen Ellyn were grown from seed at this suburban home

He dropped all the seeds back into the basket except three. Pointing to one of these, he asked, "Don't you think this is healthier looking than the others? I think it will produce a better tree."

Then pressing a damaged seed between his fingers, he added, "This one is no good—the kernel is gone. I suspect a squirrel found it. They like them because they are sweet, and hunt for them just as I do. That's why it is necessary for me to be out early in the morning."

In response to my query, he said he believed spring was the best time for planting. "But," he added, "I never plant a tree until all frost is out of the ground. And to be sure of healthy growth, I never put trees in the ground after the roots begin to sprout."

"But how do you get such uniform success with your transplanting? Is it a secret?" I asked.

"No, far from it," he replied with a smile. "But I do have my own ideas. Those thirty-eight lilac bushes I planted in Memorial Park, remember them? Well, the village board wanted to have the holes dug for those bushes, but I insisted on doing it myself. It was quite a job, but I knew what the results would be. And that's important.

"Many people make the mistake of digging holes deep in the middle. They don't realize that water will accumulate there and drown the roots. I dig the hole so that it is high in the middle and slopes away at a forty-five degree angle. That's the way roots like to lie, and it enables them to shed water. If a hole is dug that way the place for the shrub, or tree, is a depressed circle slanting up to a sort of cone in the middle. Put your shrub in there and spread the roots out slanting downward. Then pack the earth down and cover thoroughly."

Dr. Johnson smiled proudly. "Come around to Memorial Park with me sometime and I'll show you how I have grafted red, white and blue lilacs on the same bushes. I thought it was fitting that this park, which honors Glen Ellyn's soldier dead, should have the colors of the flag tied together."

I asked how it was possible to plant so many trees in such a short planting season.

"Well, it's like this," he explained. "When I was a little tike I had to get up as soon as it was light so that I could work on the farm. I never got out of the habit of getting up early. I'm out planting trees in the mornings long before most folk are out of bed.

"I dig all the holes before the actual planting time arrives. I start digging about four o'clock in the morning and keep at it until after seven. Then I dig after I get home in the afternoon—usually until dark."

I shook my head in amazement. "No wonder Glen Ellyn is known as one of Chicago's most beautiful suburban towns."

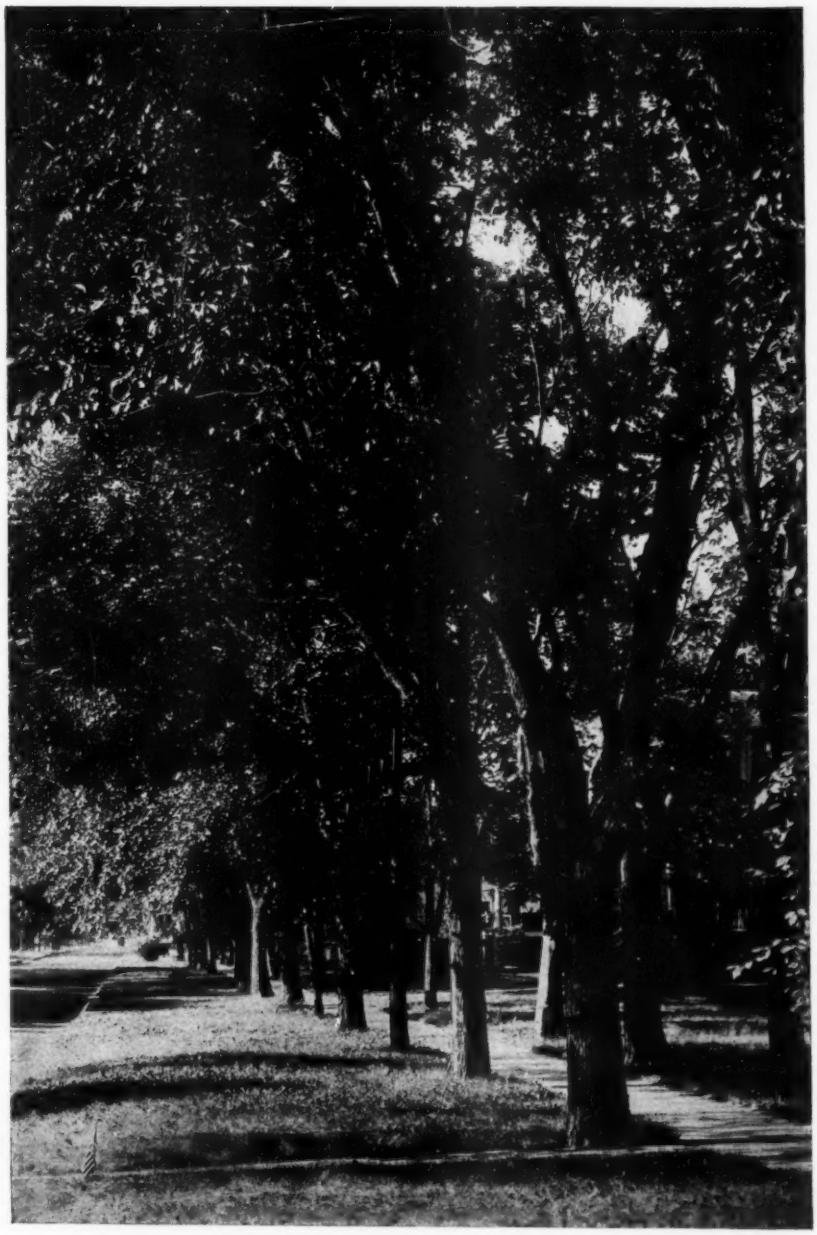
"Most people like trees," he commented, "but few take the trouble to plant them. It's too late to teach the grown-ups much, but I wish I could give every child in the world a copy of that motto." He pointed to the wall. I turned to look upon a framed motto bearing these words: "PLANT ANOTHER TREE."

"You've certainly planted your share," I observed with real admiration.

The wrinkles at the corners of his eyes deepened and disclosed a subdued smile. "The people in Glen Ellyn are like people everywhere else in the world. When I planted trees on the south side of town, the people on the north side were jealous. So I planted trees north, south, east and west. I planted trees in vacant lots, in front of schools, along the streets, and around churches of all denominations."

Rubbing his hand over his ruddy face, he jokingly added, "When I get to Heaven, St. Peter will more than likely say, 'Dr. Johnson, what church do you really belong to?' "

I am looking forward to spring so that I may visit Dr. Johnson's Memorial Park lilac project. It will be carried out as he planned, but he will not be there to explain things to me. For death came to him, and he now rests in the shadows of the trees he loved so dearly.



Green monuments to the memory of the man who planted them, usually with his own hands, are the tree-shaded avenues of this Illinois town, one of Chicago's most beautiful suburbs

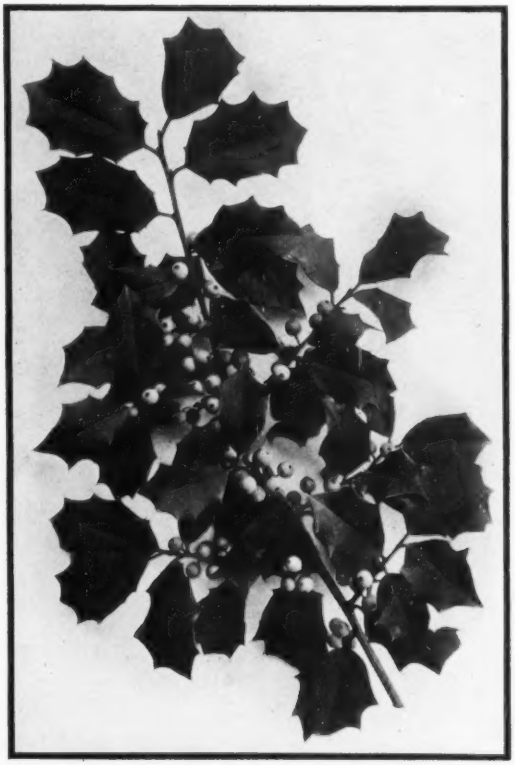
YOUR SHADE TREES:

All That Flowers Does Not Fruit

By L. E. MANNING

RECENTLY I had a letter from a man who had two hollies that had never borne their bright red berries. I wrote him they might be males, in which case they never would, or they might be females with no male near enough to fertilize them. He thought I was joking and was only reluctantly convinced that sex is as important in the plant world as it is elsewhere in nature. True, it is not often so bluntly mentioned. Under the terms "staminate" and "pistillate" the botanists disguise such familiar words as male and female. Ordinary trees and plants must have both male and female flower parts in order to have fruit.

The female pistil ends in an ovary where seeds form, and the male stamens produce semi-motile sperm called pollen which fertilizes the seed. You may wonder why the botanists invented new names for it all, but the fact is they were not being "prissy." Plants differ from animals because most plants have *both* male and female parts *on the same flower;* still others have separate male and female flowers but *both on the same plant.* A third group, like the holly, have male and female flowers *on different trees.* It follows that an ordinary tree or plant may be expected to flower and fruit without a mate. In the main this is true, but some special inbred hybrid forms produce much more fruit with a mate than without one. Apples, for instance, usually produce more fruit when more than one variety of apple is planted in an orchard. McIntosh types and Delicious types particularly need cross-pollenization. In fact the exceptions are few: Baldwin, Wealthy and Gravenstein in the late kinds; Yellow Transparent, Red Astrakhan and Early McIntosh in the earlies, and both the common crabs, Hyslop and Transcendant. All others may increase their yield two-fold or more by planting proper mates.



A beautiful fruiting branch of American Holly (Ilex opaca)

Many plants having useful or showy fruits and berries are self-sufficient as to sex and require at most cross-pollenization of a different varietal form to increase their fruit yield. Following is a list of common species:

Honeysuckles (Lonicera) ..... all kinds
Euonymus ..... all kinds
Chokeberry (Aronia) ..... all kinds
Benzoin (Spicebush)
Barberry (Berberis) ..... all kinds
Callicarpa (Beautyberry) ..... all kinds
Cornus (Dogwood) ..... all kinds
Eleagnus (Russian Olive) ..... all kinds
Myrica (Bayberry) ..... (usually)
Rhamnus (Buckthorn) ..... all kinds
Rhus (Sumach) ..... all kinds
Sambucus (Elderberry) ..... all kinds
Symphoricarpos (Snowberry) ..... all kinds
Viburnum ..... all kinds
Cotoneaster ..... all kinds
Crataegus (Hawthorn) ..... all kinds
Magnolia ..... all kinds
Prunus (Plums, cherries) ..... all kinds
(Orchard varieties, see below)
Malus (Apples and crabs) all kinds
(Orchard varieties, see below)
Sorbus (Mountain Ash) ..... all kinds
Symplocus (Turquoise-berry)
Pyracantha (Firethorn)
Vitis (Grapes) ..... all kinds
Amelanchier (Juneberry) all kinds
Asimina (Persimmon)
Morus (Mulberry) ..... all kinds
Rubus (Raspberry, etc.) ..... all kinds
Vaccineum (Blueberries) all kinds
(Orchard varieties, see below)
Hicoria (Hickories) ..... all kinds
(Orchard varieties, see below)
Castanea (Chestnuts) ..... all kinds
(Orchard varieties, see below)
Juglans (Walnuts) ..... all kinds

Orchard varieties listed above are usually benefited by planting more than one named variety of the same fruit. Such plants fall into three general classes:

1. *Absolutely need cross-pollenization:*
   Grafted hickories
   Named pecans
   Bush-cherries (Hansens, etc.)
   Japanese plums
   European plums
   Nearly all pears
   Sweet cherries

(Cross-pollenization should be of different varieties in the *same* group. Thus Bradshaw and Green Gage are both European plums, and pollenize each other. Abundance and Burbank are Japanese, and will not pollenize European kinds.)

2. *Improved by cross-pollenization:*
   Most orchard apples
   Duchesse d'Angouleme Pear
   Quinces
   Named hybrid blueberries
   Chestnuts, grafted kinds

3. *Utterly self-sufficient:*
   Sour cherries
   Crab apples
   Early summer apples
   Baldwin and Wealthy apples
   Prune plums
   Damson plums
   Apricots
   Peaches

Having cleared the board, so to speak, we may consider those few but important trees and shrubs that have separate sexes for the entire plant—and are therefore physically incapable of bearing fruit or berries unless specimens of both sexes grow near together. Three are important: holly, yew, and bittersweet; one less important, the buffaloberry, genus, *Shepherdia.*

The yew, *Taxus,* can be readily dismissed, for nearly all named forms are females and seem to bear fruit in the absence of males, though this is probably only apparently so and doubtless the pollen arrives by wind from considerable distances. To make sure, it should only be necessary to plant a few feet of unnamed yew hedge which would invariably include a scattering of males. I know of no available supply of known males. All named kinds such as Hicks, Vermeulens, Kelsey, nana *brevifolia* Hatfields, etc., seem to be females—this is true of the hardy types as they occur in America, at least.

The bittersweet vine, *celastrus,* is obtainable in known female specimens—but never a male have I heard of commercially. Since the plant is native in all woods of the eastern third of United States, there is usually a wild, hidden male near enough to set fruit on any female vine that may be flowering. But if long bitter experience proves the contrary, the easiest way out is to plant a dozen mixed-sex vines in groups of three or four in a hole. Unnecessarily numerous males can be rogued out after a few years of observation. The same method is necessary with *Shepherdia,* for, to the best of my knowledge, neither known males nor known females are to be obtained in this edible fruit. It may seem wasteful to plant more than one male, but as a practical fact it would be cheaper than paying for the extra cost of grafting or rooting cuttings even if they were available. Such small trees cost as much each as a dozen or more mixed plants raised in the ordinary way from seed—and because the public does not understand the facts it is usually unwilling to pay so much and plants of known sex are therefore not often available commercially. For all of which reasons the only practical method often is to plant a sufficient number and trust to the law of averages, as has been indicated above.

The holly is not so easily arranged for. The showiest kind hardy in our climate is American holly, *Ilex opaca,* and it becomes a sizable tree even in the north. Few places are large enough to nonchalantly set out ten or so upon the speculation that both sexes will be represented. Moreover, seedlings are not inexpensive to buy even in modest sizes. However, there is still the possibility that some chance male exists near enough to set fruit on your specimen female. I recall some years ago a nursery announced a new variety of holly that needed no male. The following year, after botanists had been busy testing, the claim was withdrawn. What had happened was that in open farm country no other holly existed within ten miles, yet the specimen had fruited. But in test conditions (in closed greenhouses) it did not. Explanation: pollen had blown ten miles. A circle of ten miles radius is nearly 400 square miles—a lot of countryside! In the eastern third of America it is likely, except in the extreme north, that a single female holly will get pollenated. However, to make sure and to increase the berry yield, it is well to plant one male tree. They *are* available if you hunt for them among commercial nurseries.

All the named forms of American holly, of course, are berry-bearing—that is, female. Such special forms as Croonenberg, Howard, Hume and Arden, all need pollen from a male plant. They are, however, extremely easy to set ablooming. When Howard was first introduced it was claimed to be self-fertile, for each flower not only had a pistil, but several distinct stamens and the stamens could be seen to *emit pollen.* This seemed such overwhelming evidence that it convinced the writer, for one. Tests in closed greenhouses proved the claim false, but the actual visible pollen seemed difficult to explain away until Dr. Zimmerman of the Boyce Thompson Institute wrote for a flowering branch and found under the microscope that the pollen was infertile. There remained one final hope to create a self-sufficient holly tree: graft on a known female one single branch of male wood. This was attempted and seemed to work well in very young plants. But alas! After a few years of growth it was found that the male branch was too vigorus and outgrew the female branches, so that the tree became ninety per cent male and fruitless. Thus fell the last hope.

Another holly, *Ilex verticillata,* usually called black alder, or winterberry—is also grown for its handsome red berries and it also needs fertilization exactly as does *Ilex opaca.* It is more commonly found wild in the northern parts of the country, but both known males and females can be obtained and moreover it is a shrub, not a tree. A mass planting of chance-sexed seedlings is therefore very much more practical than with *Ilex opaca.*

ADDENDA

Last month's article on causes of flowering, in order to simplify, made almost no mention of the effect of plant food on this phenomenon. Of the three chief foods, nitrogen alone was discussed. Potassium also, although not so obvious, has the effect among other things of stimulating roots, hence its use—as in unleached wood ash—should also be discontinued in the case of a healthy plant, which produces leaves but no flowers.

Phosphorus, on the other hand, used alone as in bone-meal, greatly encourages stem and leaf growth. It actually counteracts excess nitrogen and aids in flower production.

The Query Corner

QUESTION: What is the cotton root rot which stunts and kills trees in certain sections of the South?—G. R. T., New Hampshire.

ANSWER: This particular root rot, caused by the fungus *Phymatotrichum omivorum,* is serious in Texas, and also elsewhere in the South, but is absent from regions east of the Mississippi. Besides affecting numerous field and truck crops, it attacks 35 species of forest trees and shrubs.

QUESTION: I would like some information in regard to planting grapes. Located high in the mountains of Pennsylvania, my grape arbor is thirty feet by fourteen feet. How many plants would I need and could I plant any kind of grapes at an altitude of 2400 feet?

Please also advise the best kind of trees to plant for this altitude and mountain climate.—A. C., Uniontown, Pa.

ANSWER: Your grape arbor would take eight grapes and good, hardy kinds are: Catawba, Concord, Niagara, Worden, Fredonia and Portland.

More than a thousand trees are suited to your climate. You would have to choose which you prefer and then determine which of those kinds were best suited. Generally, your climate will grow any hardy tree except those hating wind and those hating drought. Elevation is not high enough to matter at 2400 feet, except for the increased cold in winter.

BITTERNUT HICKORY

Carya cordiformis, (Wangenheim) K. Koch

By G. H. COLLINGWOOD

THE tall sturdy, straight-trunked bitternut hickory with its well-rounded top, grows from southern Maine and Quebec to Minnesota and southward in all the states to western Florida and eastern Texas.

Bitternut, sometimes called swamp hickory, thrives best in low moist soil near the borders of streams and swamps, but it is also found on rolling uplands.

The stout spreading branches with slender branchlets form a broad handsome head when bitternut grows in the open

Natural range of Bitternut Hickory

Ordinarily a stout-branched tree reaching a height of one hundred feet with a trunk diameter of two or three feet, it attains its largest size in bottomlands of the lower Ohio River where occasionally it develops a trunk diameter of four feet, and a height of 120 feet.

There are several species of hickory. Four of them are commercially more important than the others, and these are known as the true hickories. The pecan hickories comprise a larger number of species, and it is to this group that bitternut belongs. All the hickories are members of the walnut family *Juglandaceae,* and all are slow-growing trees, but bitternut grows more rapidly than the rest. It is also the shortest lived of the hickories, reaching maturity at about two hundred years.

The most striking characteristic of the bitternut hickory is its bright yellow winter buds, which offer a means of identification. Those at the ends of the

The crown of dark green foliage is usually well-rounded and is broadest at the top. The trunk is straight and column-like

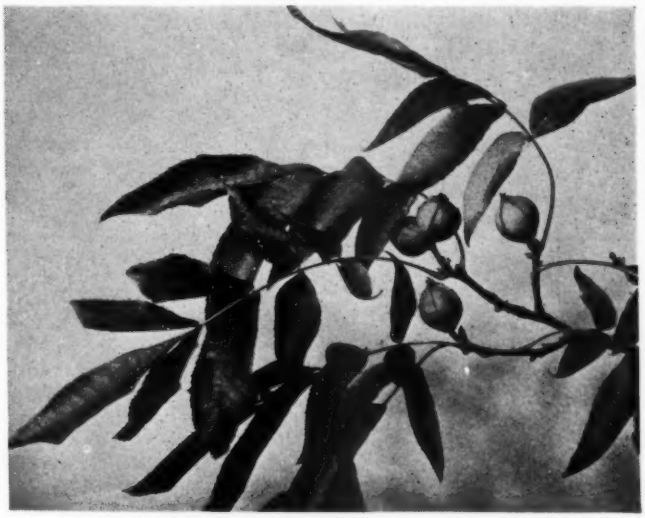
branchlets are one-third to three-fourths of an inch long, obliquely blunt-pointed, and enclosed in two pairs of rough scales. Buds at the sides of the branchlets are only one-eighth to three-quarters of an inch long, somewhat four-angled, sharp-pointed, nearly egg-shaped, and are often stalked.

The compound leaves are six to ten inches long, alternate on the branchlets and smallest of all hickory leaves. Each slender hairy stalk carries five to nine

leaflets shaped like lance heads and margined with coarse, thick-pointed teeth. The leaflets, four to six inches long and three-fourths to an inch and a quarter wide, grow directly from the stalk, and usually have an uneven base. They are dark yellow-green, shiny on the upper side and paler and hairy beneath, and turn yellow in the autumn.

The green staminate or pollen-bearing flowers appear in May or June. They are three to four inch catkins borne on the twig of the preceding season in clusters of three and hang from a common stem about an inch in length. The pistillate or nut-producing flowers, one or two to a stalk, are a half inch long, slightly four-angled, and covered with a yellow, scaly wool.

The nut, ripening in October, is almost round, abruptly contracting into a point at the end and is enclosed in a thin scaly husk which splits about half way down in four lines of division. It is smooth and gray with a reddish brown, very bitter kernel from which the tree gets its common name, bitternut.



The thin husk of the inch-long nut is four-winged and coated with yellow, scurfy hairiness. The compound leaves of five to nine leaflets are relatively small

Early settlers pressed oil from the kernel which some used as a remedy against rheumatism, while others used it to feed the flame of crude lamps.

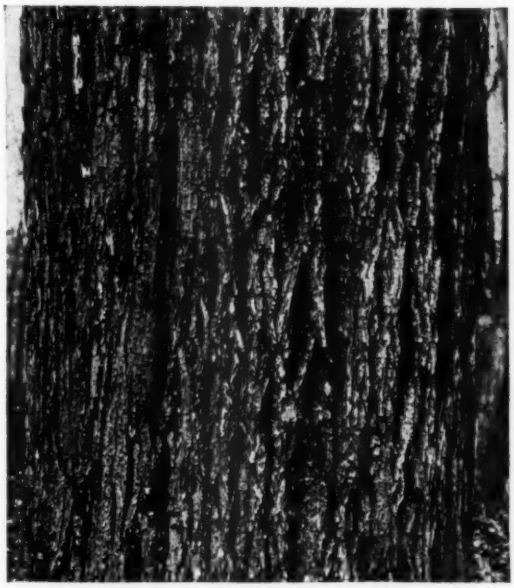
Bark on the lower trunk of mature trees is one-third to three-quarters of an inch thick, and is shallowly fissured into close, flat ridges so interwoven as to give it a net-like appearance. The slender twigs, bright green and somewhat hairy at first, soon become smooth or nearly so, and finally turn pale gray. They are marked by many small, pale, corky growths and small leaf-scars.

The dark brown wood is hard, strong, tough, and close-grained. It is heavy, a cubic foot of air-dry wood weighing forty-seven pounds. Although somewhat inferior to the wood of the true hickories in strength and shock-resisting qualities, it is used for tool handles, agricultural implements, hoops, and vehicle parts. It also makes excellent fuel.

In common with other hickories, the bitternut is susceptible to attack by a number of insects and diseases. The insect responsible for killing many trees is the hickory bark beetle. After the trees have been cut, the green wood is often seriously damaged by pinhole borers. Unless carefully stored, powder-post insects attack the seasoned sapwood of all kinds of hickory products.

Young bitternut hickory in the open is readily injured by frost. It is capable of enduring fairly dense shade for a number of years without losing vitality, and when freed by an opening in the forest, will recover and develop rapidly. This and its persistent sprouting ability when young enable it to survive many unfavorable conditions, but repeated burning or constant pasturing reduces the growth and causes the trees to become stag-headed; gives little resistance to insect attack and is ultimately followed by death.

Hickory smoke has long been considered best for curing hams and bacon. Even now thousands of cords of wood are burned in farm smoke houses. The wood



The light brown bark is tinged with red, scarcely three-quarters of an inch thick, and broken into thin interlacing ridges which never become shaggy

is also sought by those who enjoy an open fireplace because it forms firm glowing embers and relatively little ash.

Hickory is a specialty lumber, the use of which is largely limited to the places where weight is secondary to the need for strength and elasticity. It is, therefore, handled in comparatively few lumber yards. With the passing of the "horse and buggy days" when hickory was important in the manufacture of vehicles, the annual cut has declined from 333,929,000 board feet in 1909 to 37,759,000 board feet in 1939.

Wildlife Returns to Seney

(*From page* 485)

stored to Seney by an experiment that is being carefully watched. They seemed a natural part of the surroundings as they swam about the pool which had been created especially for them, but which was also being used by teals, baldpates, mallards and black ducks.

Ducks and geese, however, were not the only species that had responded to improved conditions. Northern pike, for example, had found the new surroundings very much to their liking and had increased to such an extent that the Fish and Wildlife Service considered them a potential hazard to the ducklings. With the help of a CCC wildlife crew, commercial fishermen were seining the pools for pike and loading them into the Michigan Conservation Department's fish-transportation truck—a cooperative enterprise to relieve an overabundance of the fish on the refuge and yet not waste them. These predatory fish were being removed from an area reserved primarily for raising ducks and put where they could be fished for by the many anglers that come to the region each year.

The animal that had actually stolen the Seney show was the muskrat, valuable fur-bearer. Despite the fact that muskrat farming had been among the many Seney ventures to fail, and that experts were convinced it was impracticable on the Seney marshes, muskrats are succeeding. Refuge developments so changed the character of the marshes that the animals increased rapidly—so rapidly, in fact, that they threatened interference with the area's main purpose.

This potential interference, fortunately, was one that could be controlled. At the refuge fur house were bundles of muskrat pelts that had been harvested in a most profitable sideline activity—profitable not only for the government but for local trappers as well.

PIONEER NATURALIST RETIRES

Major Edward A. Goldman, pioneer naturalist of the Fish and Wildlife Service, Department of the Interior, retired early in September after fifty-one years in government service to devote his time to the completion of a report on wild animals of Mexico for the Smithsonian Institution.

At the age of eighteen, Major Goldman became an assistant to Dr. E. W. Nelson, then a field worker for the old Biological Survey, who later became its chief. They went to Mexico together in 1892, Major Goldman remaining for fourteen years. He returned again in 1936 to help the State Department negotiate the migratory waterfowl treaty with that country. During the construction of the Panama Canal, he conducted a biological survey for the Smithsonian Institution and the War and Agriculture departments. He is responsible for many of the 35,000 stuffed birds in the collection now in the National Museum at Washington, D. C.

The trappers had been given permits to take the muskrats in a cooperative effort to reduce the population and yet realize on the harvest. Refuge officials supervised the program, protected the traps, and gave the trappers use of the refuge fur house. The trappers got half the pelts, and the Fish and Wildlife Service sold the other half for the benefit of the United States Treasury.

In the fall of 1940 and the spring of 1941, more than 10,000 pelts were taken. During the spring season, twenty-five trappers earned around $200 apiece as their share of the returns. In addition, refuge officials took 700 muskrats alive for transplanting to nearby areas.

Refuge management, it was apparent, is more than merely policing a sanctuary. Refuge management is land management for the primary purpose of increasing wildlife. But there also is the prudent purpose of getting the most from the land. The muskrat pelts in the Seney fur house were reminders of this. So was a lumber yard.

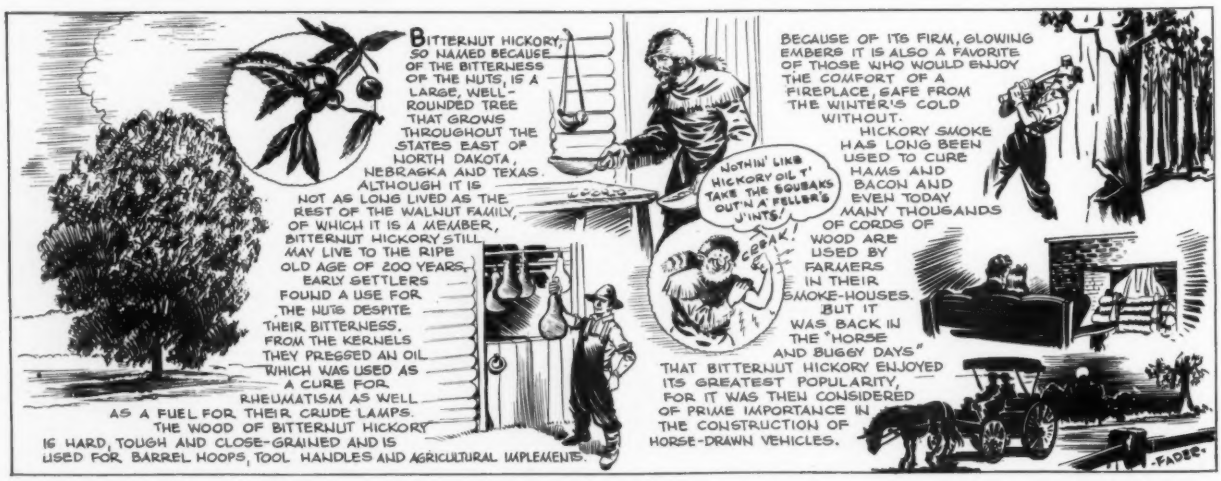
Large areas of good farmland within the refuge were being cultivated, primarily for winter food crops for wildlife, but also with a purpose not to overlook any feasible method for getting the most out of the land.

Harvey Saunders just about summarized the outstanding benefits of the Seney refuge when he said:

"There were lots of deer here in the early days, but there seem to be just as many now. Besides, there are more birds, and a good crop of muskrats.

"There is a lot of talk," he concluded, "about bringing back the good old days. That's all right. But it seems to me if you're talking about wildlife, or about using the land the way it ought to be used, we're making these Seney marshes a lot better than they ever were."

TREES AND THEIR USES—No. 78—BITTERNUT HICKORY


BITTERNUT HICKORY, SO NAMED BECAUSE OF THE BITTERNESS OF THE NUTS, IS A LARGE, WELL-ROUNDED TREE THAT GROWS THROUGHOUT THE STATES EAST OF NORTH DAKOTA, NEBRASKA AND TEXAS. ALTHOUGH IT IS NOT AS LONG LIVED AS THE REST OF THE WALNUT FAMILY, OF WHICH IT IS A MEMBER, BITTERNUT HICKORY STILL MAY LIVE TO THE RIPE OLD AGE OF 200 YEARS. EARLY SETTLERS FOUND A USE FOR THE NUTS DESPITE THEIR BITTERNESS. FROM THE KERNELS THEY PRESSED AN OIL WHICH WAS USED AS A CURE FOR RHEUMATISM AS WELL AS A FUEL FOR THEIR CRUDE LAMPS. THE WOOD OF BITTERNUT HICKORY IS HARD, TOUGH AND CLOSE-GRAINED AND IS USED FOR BARREL HOOPS, TOOL HANDLES AND AGRICULTURAL IMPLEMENTS.
NOTHIN' LIKE HICKORY OIL T' TAKE THE SQUEAKS OUT'N A FELLER'S J'INTS!
CRRAK!
BECAUSE OF ITS FIRM, GLOWING EMBERS IT IS ALSO A FAVORITE OF THOSE WHO WOULD ENJOY THE COMFORT OF A FIREPLACE, SAFE FROM THE WINTER'S COLD WITHOUT.
HICKORY SMOKE HAS LONG BEEN USED TO CURE HAMS AND BACON AND EVEN TODAY MANY THOUSANDS OF CORDS OF WOOD ARE USED BY FARMERS IN THEIR SMOKE-HOUSES. BUT IT WAS BACK IN THE "HORSE AND BUGGY DAYS" THAT BITTERNUT HICKORY ENJOYED ITS GREATEST POPULARITY, FOR IT WAS THEN CONSIDERED OF PRIME IMPORTANCE IN THE CONSTRUCTION OF HORSE-DRAWN VEHICLES.
-FADER-

America's Forest Operating in the National Interest

ONE MUST understand the forests to know how they best serve society. One should know that trees have a cycle of life from seedling to maturity—and like every growing crop, trees should be harvested at maturity, while they are in their prime, otherwise they die and serve no useful purpose.

Withholding mature trees from the harvest is akin to permitting our wheat and corn to lie ungarnered. Crops that are unharvested fail to serve society. The forest that is valuable to a nation is one that is kept in production. Its mature trees, flowing into the national economy, give employment to hundreds of thousands of people, those who work in the forest industry and those who transport, fashion and sell lumber and other forest products. The producing forest serves the needs of all America.

Modern forest management preserves our timber farms by harvesting trees, planting and seeding new trees to take their place. Thus the forest continues to be a tremendous living crop, one of America's great renewable resources.

WEYERHAEUSER

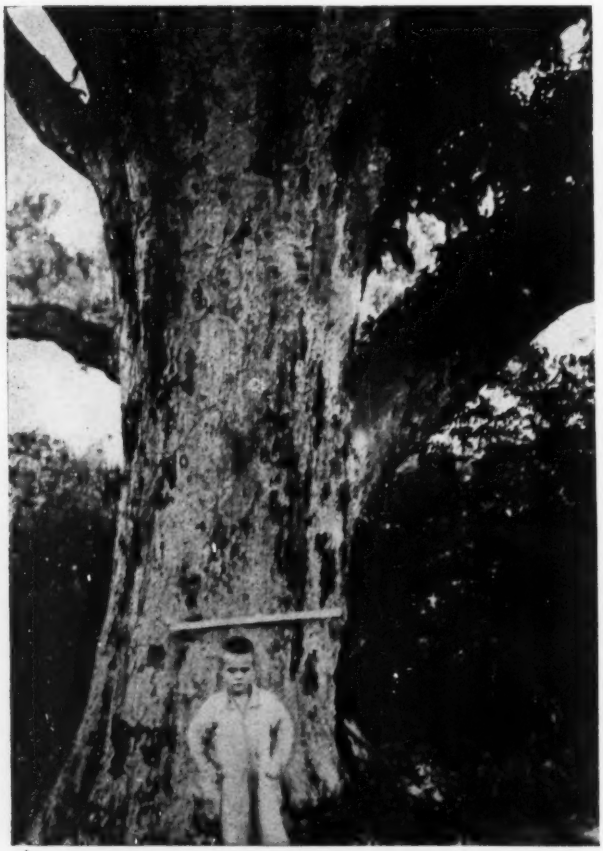
Tree Trails . . .

Across America in Search of the Rare and Unusual

THE Free State of Maryland, one of the smallest states in the Union—only seven are smaller—ranks first as the producer of big trees. Not of the truly great American giants, of course, such as the redwood, Douglas fir and giant arborvitae. These belong to the Pacific Coast. But among trees associated with the eastern half of the country, the Old Line State stands head and shoulders above all others as a producer of the largest individual specimens. Of the 212 trees now on record with The American Forestry Association as being the largest of their species, forty-one, or approximately twenty percent, grow in Maryland soil.

This small state boasts the largest tuliptree, for example, the largest black walnut, the largest honey locust. Among the hickories, no state has reported larger specimens of the shagbark, pignut, bitternut and mockernut. Its gray, river and sweet birches are the largest reported. It has the champion eastern red cedar, black cherry, bigleaf magnolia, white mulberry, loblolly pine, osage-orange and black tupelo. But it is among the oaks that Maryland is supreme. The great white oak at Wye Mills, more than twenty-seven feet in diameter, is one of the truly great trees of America. It boasts the largest chestnut oak, the largest southern red, the largest scarlet oak. The largest known specimens of turkey oak, overcup oak, blackjack oak and shingle oak grow in Maryland.

The shingle oak, champion for two years, was recently uncrowned. But, believe it or not, by another Maryland



Maryland's new champion shingle oak

Largest white ash, discovered in Ohio

"TASK BEGUN ON ISLAND X"
THERE'S no salute of guns when the Seabees go in for a landing. No show of gold braid. Just a barge-load of men in dungarees, with their tools and supplies. "*Can do*" is their motto.
One of the most important pieces of equipment that goes ashore with the Seabees is a "Caterpillar" Diesel Electric Set. It's *their* kind. Tough. Versatile. Dependable. Without fuss or temperament, it stays on the job, giving them the power they need for the saws and winches, the lights and radio.
"Caterpillar" Diesels have been in some strange places in this war. When regular Diesel fuel was lacking, they have run on anything handy—crude oil, coconut oil or aviation gasoline.
Rugged and compact, these power-plants-of-all-work can be flown in by plane, and set down in a jungle where they go to work in a matter of minutes. And they've run night and day for thousands of hours with little attention and no repairs. Because "Caterpillar" Diesel units power so many kinds of equipment, from tractors and rock crushers to pumps and compressors, they can be serviced in remote outposts with a minimum of interchangeable parts.
Today the armed forces have first call on "Caterpillar" production. When victory is won, "Caterpillar" Diesel power will be ready to serve a vast range of potential peacetime uses. And the "Caterpillar" dealer organization, now making a vital contribution to the war effort in the maintenance of older machines, will again be able to supply sturdy new "Caterpillar" Diesels.
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CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

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We invite you to participate in the program of The American Forestry Association which includes:

1. Intensification of educational and legislative activities to assure the best possible protection of forests from fire, the adoption of improved methods of forest practice, and the avoidance of unnecessary waste.

2. Active promotion of research in the field of forest products, not only by the Federal Government but also by industry and educational institutions.

3. Critical and impartial appraisal of the forest situation, with particular reference to its changing status under war and post-war conditions.

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- ☐ Sustaining Membership ____ 25
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10-43

tree. The new discovery was made by Harold B. Stabler of Washington, D. C. —a giant twelve feet, six inches in circumference four and a half feet above the ground, seventy-one feet tall, and with a limb spread of eighty-four feet.

Reports Mr. Stabler, "This tree is located in Montgomery County slightly more than ten miles to the northwest of the center of the City of Washington. It stands in an abandoned field near the home of M. Thomas Bartram, a direct descendent of John Bartram, the eminent Philadelphia botanist. I would estimate the tree to be at least 200 years old."

Another new discovery—this one in Ohio—is a white ash standing beside Highway 113, in the farmyard of Clarence D. Shimp, a mile and a half southeast of Berlin Heights, in Erie County. According to C. G. Stratton, of State Teachers College, River Falls, Wisconsin, who reported the tree, it has a circumference four and a half feet above the ground of eighteen feet, five inches. It is ninety-six feet tall and has a limb spread of ninety-six feet.

Thus the search, always fruitful, goes on for the largest specimens of American trees. Some states, like Maryland, are making thorough surveys of fields and woodlands. Even cities are combing streets and yards. In Buffalo, New York, for instance, a city-wide big tree project was conducted by Boy Scouts and high school students. Charles H. Throm, seventeen-year-old Boy Scout, located the largest tree in the city—a sycamore fourteen feet in circumference.

GRIN AND BEAR IT — By Lichty

"Hon. Spy report no need to send bombers to start fires in U. S. timber land—he say, when U. S. vacationists finish with scenery, they usually burn it!"

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600 LB. NOZZLE PRESSURE EXTINGUISHES FIRES FAST!

FIRE KNOCKED DOWN *in 30 seconds and completely out with less than 500 gallons of water, after low pressure had failed. Write for complete details of this and similar case histories.*

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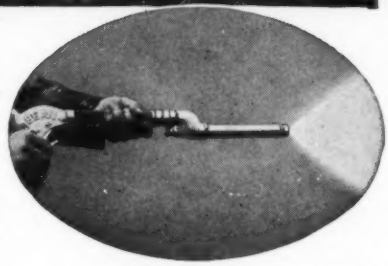
FIRE FIGHTER GUN . . . *shows trigger-lock gun releasing close-up fog for closed areas. The pump makes the pressure; the gun controls it. One man can fight fire with this gun, and can handle one ¾-inch hose easily.*



THE FMC *Fog Fire Fighter Truck . . . Equipment includes 300-gallon water tank, two lengths of hose and two Fog Fire Fighter Guns of 30-gallons per minute capacity giving 60 G.P.M. at 600 lbs. nozzle pressure.*

10 to 35 Times More Effective Than Low Pressure...Extinguishes 95% to 98% of Fires with Little or No Water Damage

High pressure atomization (600 pounds at the nozzle, 750 to 800 pounds at the pump) is the most modern and effective technique ever used in fire fighting. It is 10 to 35 times more efficient than low pressure — and as much faster. Will put fires out with little or no water damage. The FMC Fog Fire Fighter is effective on all types of fires.

Reduce Fire Losses . . . Equip with this Modern Protection! FMC Fog Fire Fighters are built in several models—light, compact, low cost —with power take-off units assuring ample power for operating the pump. Carries own water supply and complete equipment. Plan to modernize your equipment as soon as the war is over. Write John Bean Mfg. Co., 749 Hazel St., Lansing, Michigan or Bean-Cutler Division of Food Machinery Corporation, 449 Julian St., San Jose, Calif.

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1. 10 to 35 times more effective and faster than low-pressure.
2. Puts out fires with 90% less water.
3. 95% to 98% of all fires can be put out with little or no water damage.
4. Carries own water supply—up to 400 gallons, as well as attachments for taking water from any available source.
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7. Low cost for all-around fire protection.

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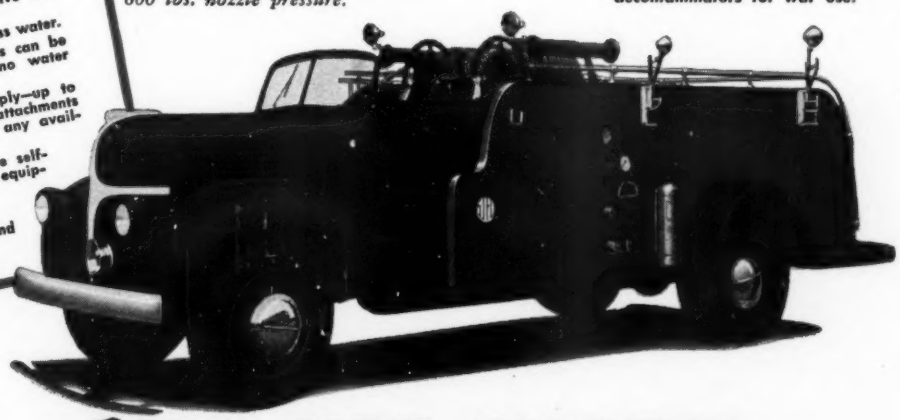

FMC Original FOG FIRE FIGHTER

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ALL STEEL HAND HOIST
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For Use Where Power is Not Practical, Available, or Sufficient
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Positive internal brake—Two quickly shifted speeds — Adjustable length crank handle — anti-friction babbitt bearings—Spring operated safety dog. Only eight parts. No keys or set screws to strip. Drum instantly free spooled for running out cable.
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Elections Committee Named by A. F. A. Board

THE Board of Directors of The American Forestry Association has named the following members to serve as the Committee on Elections to nominate officers of the Association for 1944: John Watzek, Jr., of Crossett Watzek Gates, Chicago, Illinois, chairman; Tom Gill, Forester of the Charles Lathrop Pack Forestry Foundation, of Washington, D. C., and J. F. Kaylor, State Forester of Maryland, Baltimore, Maryland.

Officers to be elected in 1944 will include the president, twenty-one vice-presidents, the treasurer and four directors,—three to serve for five years and one for two years. The three directors to be elected for five years will fill positions now held by William B. Greeley, Colin G. Spencer and Wilbur K. Thomas, whose terms expire this year. The director to be elected for two years will fill out the unexpired term of James G. K. McClure, who resigned in 1943.

Though the Committee on Elections will nominate a slate, the By-Laws of the Association entitle members to make nominations if they wish, independent of those made by the Committee, for any of the offices to be filled. The By-Laws provide that such independent nominations must be signed by not less than twenty-five members of the Association in good standing and such independent nominations must reach the Committee on Elections at 919 Seventeenth Street, Northwest, Washington 6, D. C., the headquarters of the Association, not later than November 1, 1943. The slate nominated by the Committee, together with any independent nominations made by the membership, will be offered for letter-ballot vote to the members of the Association during the month of December 1943.

Committee to Study Jackson Hole Situation

IN AN effort to settle the Jackson Hole controversy so far as local interests are concerned, Governor Lester C. Hunt of Wyoming late in August appointed a committee to review the tangled situation and report on the possibility of devising a compromise plan. This action followed congressional hearings at Jackson on the Barrett bill to abolish the Jackson Hole National Monument created by Presidential proclamation on March 15 — hearings that resulted in much conflicting testimony.

Named by Governor Hunt to serve on the committee are F. Buchenroth, chairman of the Citizens Committee of Teton County; Clifford Hansen and Charles Kratzer, representing the County Commissioners of Teton County; John McIntyre, assistant attorney general, representing the State of Wyoming; and ex-officio members Senators Joseph C. O'Mahoney and E. V. Robertson, and Representative Frank A. Barrett, all of Wyoming, and Governor Hunt. Meeting with the committee are Newton B. Drury, director of the National Park Service, and R. H. Rutledge, director of the Grazing Service of the Department of the Interior.

The first action of this committee, it is understood, will be to consider the possibility of adding a smaller area to the Grand Teton National Park than has been in effect included in it by the creation of the much disputed Jackson Hole National Moument.

The congressional hearings at Jackson, which began August 15, were before subcommittees of the Senate and House Public Land Committees. Among congressional members attending, in addition to Senator O'Mahoney and Representative Barrett, was Representative J. Hardin Peterson, chairman of the House Committee on Public Lands. Ranking officials of the Department of the Interior and of the State of Wyoming were also present. A full record of testimony presented at the hearings will probably be available later. Meanwhile, it is not believed that any action will take place in Congress on the Barrett bill until the committee appointed by Governor Hunt has reported.

At the time of going to press, Representative Barrett is reported to have stated that in case acceptable compromise boundaries are agreed upon, the probable legislative move would be to work for passage of his bill (H. R. 2241) with an amendment enlarging the boundaries of the present Grand Teton National Park.

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The Pulpwood Crisis

AMERICAN pulpwood production, which this year should attain 13,000,000 cords in order to meet critical war and home front demands, will fall short 2,500,000 cords if current trends continue, according to Arthur G. Wakeman, chief of the Pulp and Paper Branch of the War Production Board.

Pulpwood production in the United States was off more than twenty-two percent during the first four months of 1943, Mr. Wakeman said. Mill stocks are being depleted at the rate of 130,000 cords a month. Some mills in the Pacific Northwest and the Northeast are already shut down because of lack of raw material. Others throughout the country are operating on reduced schedules, some as low as thirty to forty percent of normal rates. Unless more pulpwood is produced immediately, a serious effect on the war and home front economy will result.

To combat this alarming condition, the pulpwood consuming industries have organized a War Activities Committee consisting of: H. P. Carruth, vice president, Union Bag and Paper Corporation; Stuart B. Copeland, president, Northwest Paper Company; Amor Hollingsworth, president, Penobscot Chemical Fibre Company; H. E. Houghton, vice president, Brown Company; R. W. Hovey, vice president, Oxford Paper Company; Cole G. Parker, vice-president, Kimberly-Clark Corporation; H. M. Kieckhefer, secretary-treasurer, North Carolina Pulp Company; David L. Luke, Jr., vice-president, West Virginia Pulp and Paper Company; James L. Madden, vice-president, Hollingsworth and Whitney Company; Eustis Paine, president, New York and Pennsylvania Company; and Vertrees Young, executive vice president, Gaylord Container Corporation.

H. E. Brinckerhoff, secretary-treasurer of the American Pulpwood Association, is serving as secretary-treasurer of the committee.

The committee will promote increased pulp production in all pulpwood regions. It will work with government agencies such as WPB, OWI, OPA, WMC, ODT, the Forest Service and other bureaus in the Department of Agriculture on the one hand, and with units of industry on the other to get more men — perhaps women — into the woods cutting pulpwood.

An important feature of its activities will be a newspaper and periodical publicity campaign. The newspaper industry, as a large consumer of paper, has organized a committee of its own, — the Newspaper Pulpwood Committee, which will do a good deal of the publicity work.

One of the bigger "little" things

War certainly isn't any fun, no matter *how* things are going. Maybe I feel it a bit deeper than some folks, but... my son is "somewhere in the Pacific."

However, one mighty comforting thought is this: Every day we're fighting, we're one day nearer what the statesmen call our "post-war objectives" ... in other words, the right of decent, peaceful folks to live in a decent, peaceful way.

One right that *I* include is free and peaceful hunting. I happen to like to go out through fields with my dog and my gun...and I don't want any foreigner to say *verboten.* I like to see dawn and ducks out on the marshes, without anybody telling me...well, how *do* they say *verboten* in Japanese?

I suppose the statesmen would call America's heritage of free hunting one of the "little" things we are fighting for.

But to me...and to my son...it's one of the *bigger* little things!

* * *

Here at Remington we are doing everything in our power to speed peace through victory...

—during the last 7½ months of 1942 alone, Remington produced more small arms ammunition than the entire country produced during all four years of World War I.

—thousands upon thousands of military rifles were speeded to our armed forces all over the world.

—and Remington has received four Army-Navy "E's."

The many thousands of us who are Remington are grateful that we are able to serve our country. And after the war is won, we will be glad to serve our sportsmen friends again with Remington's distinguished line of sporting rifles and shotguns, and such famous ammunition as Nitro Express shells, Kleanbore Hi-Speed .22's, and Core-Lokt big game bullets. *Remington Arms Company, Inc., Bridgeport, Conn.*

"Nitro Express," "Kleanbore," "Hi-Speed," and "Sportsman" are Reg. U. S. Pat. Off.; "Core-Lokt" is a trademark of Remington Arms Co., Inc.

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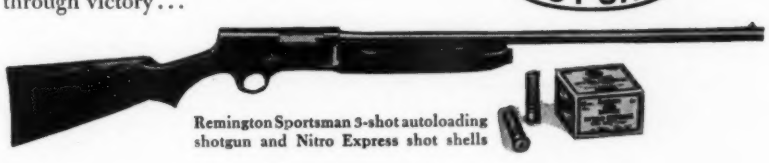

Remington Sportsman 3-shot autoloading shotgun and Nitro Express shot shells

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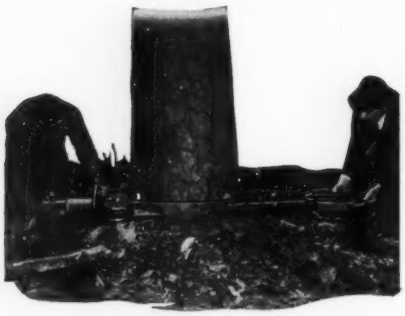
To Pressing Wartime Needs for MORE LUMBER



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MORE LUMBER from the same number of trees — that's right in the tempo of the times when the pressure is on for more output. With the Atkins-Hassler Electric Tree Faller you can cut stumps virtually to the ground, securing an added average recovery of 6% from stumpage.

What's more, it's an easy handling power saw that ends the back-breaking job of manual falling and bucking . . . makes the timberman's work easier . . . provides a new incentive to work in the woods.

EASY TO HANDLE—No problem for older men.

SPEEDS UP FALLING — Cuts 54" softwood log in 70 seconds.

BUCKS AND LIMBS with equal efficiency.

LIGHT WEIGHT — 46" length cut weigh only 85 lbs.

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LOW MAINTENANCE COST—Built to stand up under severe conditions.

REDUCES FIRE HAZARD.

E. C. ATKINS AND CO.
413 South Illinois Street
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Cutting a Name for Themselves in National High Speed Production

"Ding" Honored

FOR distinguished service in the field of conservation, Jay N. "Ding" Darling, noted conservationist and cartoonist, will receive one of the three Theodore Roosevelt Distinguished Service Medals awarded for 1943, according to James R. Garfield, president of the Roosevelt Memorial Association. Honored with Mr. Darling will be Eleanor Robson Belmont, humanitarian, and Joseph C. Grew, former U. S. Ambassador to Japan.

Although his contributions to conservation have been many and varied over a long period of years, "Ding" Darling is probably best known as the former chief of the Biological Survey of the Department of Agriculture, now the Fish and Wildlife Service of the Department of the Interior, and as the first president and one of the founders of the National Wildlife Federation. Also, he instigated a twenty-five-year program of wildlife conservation in Iowa, since copied by other states.

Death Claims Dr. T. Gilbert Pearson

DR. T. Gilbert Pearson, president emeritus of the National Association of Audubon Societies, and one of the best known conservationists in the nation, died early in September in New York City. He was sixty-nine years old.

The well known ornithologist, until his resignation in 1934, had served for fourteen years as president of the national association. He became chairman of both the United States and Pan-American sections of the International Committee for Bird Preservation in 1938, and was also founder and chairman of the National Conference on Wildlife Legislation.

An advisor to and a member of many organizations devoted to wildlife conservation, Dr. Pearson served on President Herbert Hoover's Yellowstone Park Boundary Commission and was a national director of the Izaak Walton League of America. He was a member of the Conseil Internationale de la Chase, and of the advisory board of the Migratory Bird Treaty Act.

In 1925 he was decorated with the National Order of Oaken Crown by Luxembourg, in 1937, the medal of the Société Nationale d'Acclimation of France, and in 1939 the John Burroughs Memorial Association medal.

Dr. Pearson was a native of Illinois, was graduated from Guilford College, North Carolina, in 1897, and received a B. S. degree at the University of North Carolina in 1899.

USE POSTER STAMPS IN YOUR WARTIME FIGHT AGAINST FOREST FIRES

Each Stamp in 4-Colors.
Actual Size

These stamps will help spread the message of forest fire prevention. Each stamp beautifully printed in 4-colors. Available in sheets of 100 at $1 a sheet. They are ideal for use on letterheads and envelopes, and each sheet used will mean that 100 individuals have been appealed to directly in the immediate fight to "stop forest fires before they start."

SEND YOUR ORDER TODAY.
STAMP OUT FOREST FIRES WITH POSTER STAMPS.

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Please send me ..... sheets ($1 per sheet) of the new Forest Fire Prevention Poster Stamps (100 to a sheet). I enclose $.....

Name.....

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THE AMERICAN FORESTRY ASSOCIATION
919 SEVENTEENTH ST., N. W.
WASHINGTON 6, D. C.

10-43

Fire Protection Funds Allocated to States

DISTRIBUTION of the $6,300,000 appropriated by Congress for the fiscal year 1944 for federal cooperation with the states in forest fire protection under the provisions of the Clarke-McNary law, has been announced by the U. S. Forest Service. Of the total appropriation, $2,300,000 is to be used for emergency protection in critical military areas.

After deducting $227,000 for administration and special purposes connected with the law, distribution to the states is as follows:

California, $682,948; Washington, $414,754; Oregon, $316,878; Michigan, $221,440; Florida, $179,790; Wisconsin, $145,186; Minnesota, $137,373; Alabama, $117,834; Arkansas, $107,812; Georgia, $107,495; Louisiana, $107,486; South Carolina, $104,457; New York, $98,979; North Carolina, $95,577; Idaho, $82,981; Mississippi, $78,663; Maine, $70,826; Pennsylvania, $69,646; Texas, $69,864; Tennessee, $57,068; New Jersey, $53,223; West Virginia, $52,910; Virginia, $51,101; Massachusetts, $50,985; Montana, $43,975; Kentucky, $29,200; Oklahoma, $28,451; Missouri, $26,955; Connecticut, $24,965; New Hampshire, $24,517; Maryland, $21,606; Vermont, $19,525; Colorado, $15,787; Ohio, $13,648; Indiana, $12,950; Utah, $7,766; Rhode Island, $7,357; Illinois, $6,960; New Mexico, $5,339; Nevada, $3,414; Delaware, $3,000; South Dakota, $1,957; and Hawaii, $1,117.

The fund for critical military areas so far has been allotted only by Forest Service regions, as follows: North Pacific region, $675,000; southern region, $585,000; eastern region, $525,000; north central region, $200,000; California region, $100,000; northern region, $63,000; intermountain region, $10,000; and Rocky Mountain region, $7,000.

Army "Salute to Wood" Caravan in South

AN Army "Salute to Wood" caravan, comprising some 250 infantry troops, with accompanying technicians, field and war equipment, by direction of Robert P. Patterson, Under Secretary of War, is conducting an "On to Victory" tour through the lumber and pulpwood producing areas of ten southern states. The caravan mobilized at Meridian, Mississippi, on August 25, and will disband at Lynchburg, Virginia, on October 8.

The purpose of this "Salute to Wood" caravan is to stimulate production of lumber and pulpwood to help overcome shortages which threaten to impede the nation's war effort. The tour will cover 4,200 miles. Parades and war shows will be given by the caravan in thirty-eight mill and woods centers and in addition side trips will be made by Army officers, combat veterans and industrial representatives, to sawmills, pulpmills and cutting operations where direct appeals will be made to the workers and woodsmen.

The caravan will reach most of the primary producing centers in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas and Virginia, the source of about forty percent of the nation's supplies of lumber and pulpwood. At each place visited the caravan will stage a parade, followed by a war show and an exhibit of war products made from lumber and pulpwood.

In the caravan are amphibious and land jeeps, scout cars, flame throwers, anti-aircraft searchlights, anti-aircraft machine guns, tank guns, field machine guns with fixed mounts, Bazooka guns, and other weapons. Among the many exhibits of products manufactured from lumber and pulpwood are life-rafts, skiis, toboggans, supply and flare parachutes of paper and rayon, walkie-talkie radios, smokeless powder, charcoal, watertight kraft paper ammunition and V boxes for shipping blood plasma, assault boats, a ten-foot section of a pontoon bridge, laminated aircraft propeller blades, sections of fighting planes, and other military and naval equipment.

"The War Department realizes that the magnitude of our actual and impending operations cannot be maintained without more adequate supplies of forest products," Under Secretary of War Patterson said in announcing the caravan. "These supplies must come from all portions of the country, with particular reference to the South at this time. The basic economy of the country must, of course, be maintained, at least in its minimum requirements, and an overall increase in production is imperative if we are to accomplish this and at the same time support the war in the magnitude necessary."

The caravan will seek to focus attention of lumber and pulpwood producers upon the urgency of the situation.

An "Apple" shape Kaywoodie, $3.50.

"I Smoke a Kaywoodie"

I can't imagine how things would be if I didn't have my Kaywoodie Pipe.

As I sit and watch the smoke curl upwards, I bless the smell of it—a fragrance rare and fine, neither sweet nor strong. I never had the same taste from other pipes.

I think how the briar in this Kaywoodie pipe is older than I am. It always stays good-tempered and mild. If I were going to choose another pipe, I'd certainly pick another Kaywoodie—there's sweetness and flavor in the wood.

Kaywoodie Co., New York and London
In New York, 630 Fifth Avenue, New York 20, N. Y.

BUY WAR BONDS

NOW THAT WE HAVE TO WALK, by Raymond Tifft Fuller. Published by E. P. Dutton and Co., Inc., New York, N.Y. 256 pages. Price $2.50.

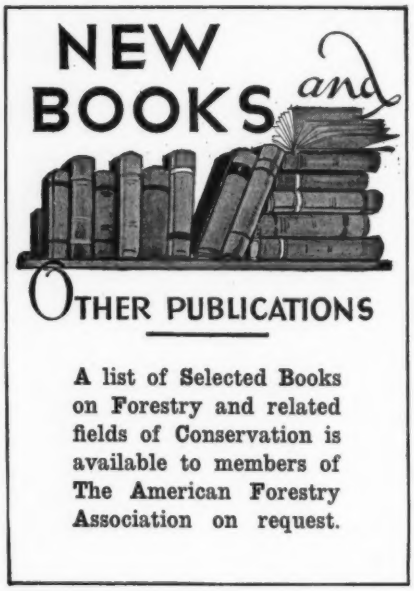
Automobiles contributed much to the hectic frenzy for "doing things" which characterized most Americans before the ban on pleasure-driving. Then suddenly the nation was faced with the perplexing problem of finding recreation without the transportation to which effete minds and lazy bodies had become accustomed. This book, written by a man who is a "disciple" of nature in the real sense of the word, offers an effective solution by means of which both stimulation and relaxation may be had for the taking—the use of one's own powers of locomotion for a closer approach to nature. By taking up walking or bicycling and at least one nature hobby, one has a year-round source of healthful entertainment and, what is even better, the opportunity to discover himself and learn how to live. There are chapters in this book which concern walking at night and at different seasons of the year and tell of the author's unexpected encounters with various types of wildlife. The author outlines a reforestation project of his own which turned into a profitable commercial enterprise from the sale of Christmas trees. A helpful list of organizations and periodicals is included to aid the hobby-seeker.

INTERNATIONAL AGREEMENTS ON CONSERVATION OF MARINE RESOURCES, With Special Reference to the North Pacific, by Jozo Tomasevich. Published by Food Research Institute, Stanford University, California. 1943. 297 pages. Price, $3.00.

Unfortunately deep-sea fishing is mostly on ocean waters where the doctrine of the "freedom of the seas" means that all may fish without restraint. Even off-shore fishing within the limits of national jurisdictions is difficult to control when the boundary lines cut across the fishing grounds. International agreements limiting the take by the nationals of the different countries is the only solution.

Dr. Tomasevich describes attempts at regulation of various fisheries by means of such agreements. Fortunately for the layman he starts with non-technical discussion of the biological and economic problems involved in each instance before entering the political problems bound to intrude in working out details of the agreements.

The international agreements discussed are the Alaskan fur seal, the Pacific halibut, the sockeye salmon, the International Whaling Convention and the American Great Lakes Agreement. These agreements seem to have succeeded somewhat in inverse proportion to the number of political jurisdictions and the difficulties of the technical problems involved. The whaling agreement broke down because Germany and Japan, being late comers in the industry, were not interested in conservation unless assured of as large a catch as the nations already in the field. The fur seal agreement was successful until Japan denounced the treaty on which it was based. The others seem to be working out gradually but the field of international fishery control on an adequate scale awaits better international relations and more technical knowledge.


NEW
BOOKS and
OTHER PUBLICATIONS
A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

AMERICAN SILVICS AND SILVICULTURE, by Edward G. Cheyney. Published by the University of Minnesota Press, Minneapolis, Minnesota. 472 pages, illustrated. Price, $5.00.

This unique book assembles into one volume the essential facts of the theory and practice of silviculture in American forests.

Beginning with a review of silvics, the author proceeds with a description of the forest regions of the United States, reproduction methods, intermediate cuttings, and a silvical description of all the important commercial species. The latter section is a particularly needed contribution.

Foresters who are bogged down in the technical phases of the subject will find their heads cleared by Mr. Cheyney's refreshingly practical discussions. The average reader who wants to acquire a better knowledge of our forests and their management will learn how foresters assist nature to produce better trees.

THE PINE TREE SHIELD, by Elizabeth C. Flint. Published by Doubleday, Doran and Company, Inc., New York. 251 pages. Price, $2.50.

A novel based on the life of a very colorful figure in American forestry—the late Howard R. Flint who for more than twenty years served with the United States Forest Service in the Northern Rocky Mountains. As his wife, the author shared not only his ideals and devotion to duty, but the trials and tribulations, the privations and dangers of a forest officer.

In vivid style, Mrs. Flint weaves a story of intense interest—a story of deep convictions and great dreams brought to a fruitful conclusion through sacrifice and in the face of unending dangers. It highlights an era of forest protection, while at the same time dramatizing with consistent accuracy the saga of those men of the forest who dedicate their lives and fortunes to conservation.

This novel is more than a compelling human chronicle. It is a highly enlightening chapter in the history of American forestry.

DE SHOOTINEST GENT'MAN and Other Tales, by Nash Buckingham. Published by G. P. Putnam's Sons, New York. 222 pages, illustrated. Price, $2.50.

A collection of colorful hunting stories that will warm the heart of any sportsman. Originally published in a deluxe limited edition in 1934, this modern sporting classic now may be read and treasured by hunters everywhere.

As hunting is known today, this, in brief, is a saga of days that are gone forever. But they are stories that will live as long as there is a literature of sports afield or astream. Few know the Southland's hunting grounds as well as Nash Buckingham; not many share his intimate knowledge of their warm traditions. This is why *De Shootinest Gent'man* is one of the finest reading opportunities for sportsmen today. No sportsman should miss it.

NAME THAT ANIMAL, by Dr. E. C. Driver. Published by the Kraushar Press, Northampton, Massachusetts. Illustrated. 527 pages. Price, $5.00.

A guide to the identification of the common land and fresh water animals of the United States, with special reference to the area east of the Rockies. An interesting and remarkably simple approach to the subject by the use of keys. The beginner as well as the advanced student will find this book of great value.

Mister—you're getting paid in DYNAMITE!

LET'S NOT KID OURSELVES about this. Our pay envelope today *is* dynamite.

If we handle it *wrong*, it can blow up in our face . . . lengthen the war . . . and maybe wreck *our* chances of having happiness and security *after* the war.

The wrong way to handle it...and why

The wrong way is for us to be good-time Charlies. To wink at prices that look too steep . . . telling ourselves we can afford to splurge.

We *can't* afford to—whether we're business men, farmers, or workers. And here's why:

Splurging will boost prices. First on one thing, then all along the line.

Then, wages will have to go up to meet higher prices. And higher wages will push prices up some more . . . faster and faster, like a runaway snowball.

The reason this can happen is that there is more money in pay envelopes today than there are things to buy with it. This year, we Americans will have *45 billion* dollars more income than there are goods and services to buy at present prices. *45 billion dollars extra money!*

That's the dynamite!

The right way to handle it...and why

Our Government is doing a lot of things to keep the cost of living from snow-balling.

Rationing helps. Price ceilings help. Wage-and-rent stabilization helps. Higher taxes help. They're *controls* on those dangerous excess dollars.

But the real control is in our hands. Yours. Mine.

It won't be fun. It will mean sacrifice and penny-pinching. But it's the only way we can win this war . . . pay for it . . . and keep America a going nation afterwards.

And, after all, the sacrifice of tightening our belts and doing without is a small sacrifice compared with giving your life or your blood in battle!

Here's what You must do

Buy only what you absolutely need. And this means absolutely. If you're tempted, think what a front-line soldier finds he can get along without.

Don't ask higher prices—for your own labor, your own services, or goods you sell. Resist pressure to force YOUR prices up.

Buy rationed goods only by exchanging stamps. Shun the Black Market as you would the plague.

Don't pay a cent above ceiling prices.

Take a grin-and-bear-it attitude on taxes. They must get heavier. But remember, these taxes help pay for Victory.

Pay off your debts. Don't make new ones. Getting yourself in the clear helps keep your Country in the clear.

Start a savings account. Buy and keep up adequate life insurance. This puts your dollars where they'll do you *good*.

Buy more War Bonds. Not just a "percent" that lets you feel patriotic, but enough so it *really* pinches your pocketbook.

If we do these things, we and our Government won't have to fight a post-war battle against collapsing prices and paralyzed business. It's *our* pay envelope. It's up to *us*.

KEEP PRICES DOWN!

Use it up • Wear it out
Make it do • Or do without

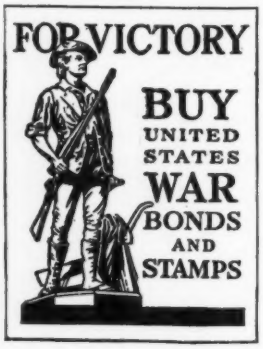
This advertisement, prepared by the War Advertising Council, is contributed by this Magazine in co-operation with the Magazine Publishers of America.

Experience gained through the handling of Navy Contracts has equipped us to serve better than ever old customers and new in the portable pump field.

Fire Fighting Equipment Division

PACIFIC MARINE SUPPLY COMPANY

Seattle, Washington



YOUR WAR BONDS WILL BEAT THE ENEMY!

NEW LOGGING TRAILERS AVAILABLE

The government has authorized Fruehauf to produce light, medium and heavy-duty logging Trailers—both single axle and tandem axle types. Available for immediate delivery through Fruehauf Branches to anyone with a Certificate of Transfer PD—321. See your Fruehauf Branch for assistance in filing for a Certificate.

FRUEHAUF TRAILER CO. — DETROIT

Lumber Production Off

LUMBER production during the first six months of 1943 totaled 16,023,743,000 feet, according to estimates released by the War Production Board's Lumber Division. This is half the 1943 domestic production requirements as estimated in January. Since then lumber consumption for military and essential civilian needs have been reestimated at thirty-six billion feet. The lumber situation is therefore critical, as a seasonal decrease in production is usual in the fourth quarter of the year.

June production was 3,015,030,000 feet, almost two percent increase over that of May, approximating the normal seasonal rise for the country as a whole.

Breakdown of June production by regions follows: Northeast, 194,728,000 feet; Appalachian, 170,595,000 feet; North Central, 50,576,000 feet; South Central, 76,307,000 feet; Lake States, 85,800,000 feet; South, 997,723,000 feet; Prairie States, 5,710,000 feet; North Pacific, 1,018,866,000 feet; South Pacific, 250,352,000 feet; Northern Rocky Mountain, 111,048,000 feet; Southern Rockies, 53,325,000 feet.

Forest Fire Report

ACCORDING to a report issued by the U. S. Forest Service, there were 208,218 forest fires recorded in the United States during the year 1942—an average of 570 fires a day. In the aggregate, these fires burned 31,854,124 acres, an area about the size of New York State. The total damage caused was estimated at $44,807,427. The 1942 record shows an increase over 1941 in number of fires of 8,500, in acres burned of 5,450,000 and in total damage of $7,635,000.

Fifty-nine percent of the fires, eighty-six percent of the area burned and seventy-six percent of the damage in 1942 occurred on twenty-three and a half percent of the forest areas of the country not under organized fire protection. The efficiency of protection is gaugeable by the fact that slightly less than one percent of the protected area was burned against about twenty percent reported from the unprotected area.

Disregarding 3,762 fires of unknown origin and 6,753 due to miscellaneous causes, only 6,707 fires were caused in protected regions by acts beyond the control of man, namely by lightning. The remaining 68,567 fires were, directly or indirectly, of human origin. The largest human cause was incendiarism. The next largest was carelessness of smokers. Combined with 3,398 fires chargeable to campers, these involuntary woods burners accounted for over 21,000 fires. Brush and other debris burners let 13,-

944 fires get away and railroads were responsible for 5,020 more. Lumbering operations were responsible for only 1,386 fires.

Regionally the largest number of fires, the greatest area burned, the greatest damage, the largest number of incendiary fires were in the South. There also is the largest area of unprotected forest land, yet it is one of the most important forest areas of the country.

Costa Rica Oaks

(*From page* 487)

try, is in forest. Enormous areas are unexplored; no one knows what trees are there and for what use the timber is most valuable.

The war and the urgent need for large supplies of hardwoods both in the United States and the Latin American countries have brought these tropical timberlands under closer observation. To investigate and explore these resources, there was created early this year the "Latin American Forest Resource Project," which was conducted by the United States Forest Service with funds supplied by the Office of the Coordinator of Inter-American Affairs.

Two project field parties were organized, one to work in Costa Rica, the other in Ecuador. The leader of each party was an experienced forester; each party also included a forester specializing in wood utilization, a forest botanist to identify the tree species and secure botanical and wood specimens, and a forester with tropical experience to estimate timber stands.

That is how we came to be walking through this rare and unknown oak forest on the mountainside in Costa Rica. As members of the project field party to that country we had been requested by Army Engineers constructing the Inter-American Highway to examine a stand of large timber along the right-of-way. The giant oaks were our reward.

Undoubtedly a considerable portion of this stand will be used for bridge timbers in the construction of this mountainous highway; and as the highway expands and means of transportation become available there will be other and varied structural uses. Such large quanities of clear oak timber will undoubtedly be used for timbers for shipbuilding, oak veneers, cooperage and the many uses for which oak is preferred in this country. The Costa Rica government, however, has promised to preserve a strip along the highway for scenic and scientific purposes—a national park to be preserved for posterity. Perhaps some day tourists driving over this jungle road will experience the same thrill on entering the forest of oaks that we—a group of exploring foresters—did.

Invest in GROWING TIMBER

COLIN G. SPENCER, Carthage, North Carolina, offers his services as financial adviser in the purchase, sale and management of timberlands, and cutover lands for reforestation.

Expert practical service, with experience extending over a quarter of a century, in acquiring, estimating and appraising timberlands that will grow thrifty timber; management, planting forest, manufacturing and marketing forest products. Can furnish plotting, mapping and estimating service upon request.

Top references among Federal, State and civilian authorities. Address:

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Technical Advice and Practical Service

Expert Service Demonstrated by Modern Business Methods

GROW XMAS TREES FOR OR FOREST

Write Today for Special Christmas Tree Bulletin and Complete Forest Tree Price List

	Per 1,000
2 yr. American Red Pine	$10.00
2 yr. Austrian Pine	15.00
2 yr. Colorado Blue Spruce	10.00
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CHESTNUT TREES

Buy Bearing Blight - Resistant Chinese Chestnuts

Easily grown, heavy yielders. Northern Strains

NUTS IN FOUR YEARS!

Plant for Beauty—Profit—Shade—Nuts—Fun

Send postcard for FREE Booklet and Prices on 42 var. of Nut Trees. Excellent for ornamental purposes. I have experimented with nut trees for over 46 years.

Sunny Ridge, 442 New St., Swarthmore, Pa.

TREES FOR FOREST PLANTING

PINE•SPRUCE

Firs, Arborvitaes and Other Conifers. We raise all our trees in our own nurseries.

KEENE FORESTRY ASSOCIATES
KEENE, NEW HAMPSHIRE

TREES FOR SALE

FOR FOREST PLANTING

Norway Spruce, Red Pine, White Pine, Scotch Pine, White Spruce, Colorado Blue Spruce, etc. Prices are reasonable and the trees are GUARANTEED TO LIVE.

WESTERN MAINE FOREST NURSERY, DEPT. F.
Fryeburg, Maine

8 Patents. Best material.

Infringers and imitators warned.

Best High Carbon Steel—Strong, Durable

THE RENOWNED
Rich Forest Fire Fighting Tool

Any quantity sold up to the thousands.
Write for Prices and Description
C. H. RICH WOOLRICH, PA.
The Government buys by the thousand.

Camphor From Pines

(*From page 475*)

chemists wondered, to transform cheap, easy-to-get turpentine into camphor? This shuffling around of a few atoms within a molecule and in the process adding a single atom of oxygen looked easy, yet it took forty years. The process has now reached the production stage.

Times and Advertiser stated that a camphor shortage was sure to defeat America. If these Jap propagandists could visit certain closely-guarded American factories, they would learn that America has no camphor shortage!

The war stimulated lagging interest, also, in the production of natural camphor from trees already growing within the continental limits of the United States. Until our synthetic camphor program got under way, Uncle Sam's experts had many anxious moments. A camphor tree of good size was actually removed from a street corner in Santa Barbara, California, under the direction of Director M. Van Rensselaer of the Santa Barbara Botanic Garden, and shipped east at considerable expense in

A Formosan camphor tree

The actual steps which turpentine goes through before it emerges as camphor interest only the chemical engineer. It is enough that a native wood's product is substituting for an imported one and, thanks to our scientists, is doing its job with complete effectiveness. How much turpentine-camphor is being produced is a military secret, but it is no secret that the Jap camphor monopoly has been broken forever. The Japs don't seem to realize it yet. Recently, the Japanese

Cant Hooks

Bull Dog Grabs

Forged Steel Swivels

Peavies

Single and Double-Bit Axes—all patterns and weights.

Buy from your dealer, but if he cannot supply you, write us.

WARREN AXE & TOOL CO., Warren, Penna.

SAGER AXES AND BULL DOG LOGGING TOOLS—KNOWN FROM COAST TO COAST

A message for you...from 1953

(Today, John Jones is just an average American, wrestling with all the doubts and worries and problems that beset every one of us right now. But let's skip ahead 10 years. Let's look at John Jones* then*—and listen to him . . .)

"SOMETIMES I feel so good it almost scares me.

"This house—I wouldn't swap a shingle off its roof for any other house on earth. This little valley, with the pond down in the hollow at the back, is the spot I like best in all the world.

"And they're mine. I own 'em. Nobody can take 'em away fromme.

"I've got a little money coming in, regularly. Not much—but enough. And I tell you, when you can go to bed every night with nothing on your mind except the fun you're going to have tomorrow—that's as near Heaven as a man gets on this earth!

"It wasn't always so.

"Back in '43—that was our second year of war, when we were really getting into it—I needed cash. Taxes were tough, and then Ellen got sick. Like almost everybody else, I was buying War Bonds through the Payroll Plan—and I figured on cashing some of them in. But sick as she was, it was Ellen who talked me out of it.

" 'Don't do it, John!' she said. '*Please* don't! For the first time in our lives, we're really saving money. It's *wonderful* to know that every single payday we have *more* money put aside! John, if we can only keep up this saving, think what it can mean! Maybe someday you won't have to work. Maybe we can own a home. And oh, how good it would feel to know that we need never worry about money when we're old!'

"Well, even after she got better, I stayed away from the weekly poker game—quit dropping a little cash at the hot spots now and then—gave up some of the things a man feels he has a right to. We made clothes do—cut out fancy foods. We didn't have as much fun for a while but we paid our taxes and the doctor and—we didn't touch the War Bonds.

"We didn't touch the War Bonds then, or any other time. And I know this: The world wouldn't be such a swell place today if we had!"

The Treasury Department acknowledges with appreciation the publication of this advertisement by

★ AMERICAN FORESTS ★

Heat With Wood

INSTALL AN

ASHLEY

Downdraft patented woodburning home heater.

— Burn Wood —

Enjoy 24 hour continuous heat, save up to 50% and more on fuel. More heat due to Ashley's patented downdraft thermostatic system, according to many letters on file from Ashley users which we will gladly send upon request.

No fires to build daily, remove ashes on average of three times a month. Burns wood, small worthless type trees, clean, native plentiful fuel. WOOD. Refuel morning, then at night, enjoy 24 hour continuous heat.

8 types and prices, $34.95 up to $49.95. We pay express anywhere.

Over 2,000 retailed in one city and trading area. Our 12th year. Five patents, many thousands in use, time tested and proven.

Burn Wood, conserve other fuels which the Government must ration.

If no dealer near you, write. We will ship prepaid anywhere.

Ashley Automatic Wood Stove Co.
Columbia, S. C.

OFFICIAL
U. S. FOREST SERVICE
FIELD CLOTHING

- Specified Fabrics
- Expert Tailoring
- Perfect Detailing
- Guaranteed Fit
- Prompt Delivery

Write for latest prices and sample fabrics.

THE FECHHEIMER BROS. CO.
Uniforms for Over 50 Years
CINCINNATI OHIO

J. NEILS LUMBER COMPANY
Selective Logging Saves Forests for Future Generations
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Write today for valuable 72-page booklet, "How to Get Your Patent" and "Record of Invention" form—both free.
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INGERSOLL SHOVELS
Blade Edges Guaranteed SPLIT-PROOF!
Shovels, Spades and Scoops of TEM-CROSS Steel (Interlocking, mesh-grain structure) are light, strong, and hold edge unusually well.
INGERSOLL STEEL & DISC DIVISION
Borg-Warner Corporation, New Castle, Indiana

the summer of 1942. A chemical firm chipped it up and recovered satisfactory camphor but at a prohibitive expense. At present turpentine-camphor has completely replaced the natural product so far as America is concerned.

There is only one small difference between natural and synthetic camphor. The natural product is "right-handed" and the synthetic is what might be termed "ambidextrous." This curious distinction is based on what is known as optical isomerism—the fact that certain chemicals occur in two crystalline forms which are mirror-images of each other just as your right hand is a mirror-image of your left.

Dissolving one form of crystals produces a solution which bends polarized light to the right and is called dextro-rotatory. The other form rotates it to the left and is called laevo-rotatory. A mixture of equal amounts of left-handed and right-handed crystals doesn't rotate light at all. Synthetic camphor is just such a mixture of the two forms. Incidentally, the turpentine from American trees is right-handed while that from French trees is left-handed.

Synthetic camphor derived from turpentine is chemically identical with that from camphor trees and this new product which the war has ushered in is doing a first-class job in American industry.

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Stabler, Harold B. — page 498 (left).

Mead, Wilfrid J.—pages 483, 484 and 485.

Straton, C. G.—page 498 (right).

WHO'S WHO
Among the Authors in this Issue

JOHN CLARK HUNT (*Fire-Fighting After the War*), native of Kentucky, recently began his fourteenth year in the ranks of the U. S. Forest Service in forest protection, administration and public relations work. He is attached to the Greenville Ranger Station in California.

ARTHUR BEVAN (*Giant Oaks of Costa Rica*) has been Director of the Tropical Forest Experiment Station at Rio Piedras, Puerto Rico, since 1939. He was graduated by the University of Washington in forestry—*cum laude*—in 1920.

Arthur Bevan

SIGMUND SAMETH (*Camphor from Pines*), author and botanical explorer, and an anthropologist by profession, gathers the material for his many interesting contributions to current magazines while exploring professionally—and "vagabonding"—his pet hobby.

JOHN L. BLACKFORD (*Magnificent Waters*) writes from Libby, Montana. Wildlife and mountain student, he again illuminates the printed page with the magic of America's outdoor beauty.

CHAPIN FOSTER (*Collins Almanor Forest*) is well known in the State of Washington as a publisher.

HOWARD ZAHNISER (*Wildlife Returns to Seney*), employed for more than ten years with the Biological Survey and the Fish and Wildlife Service of the Department of the Interior, is now attached to the Information Division of the Bureau of Plant Industry, Soils and Agricultural Engineering, of the Department of Agriculture.

ARTHUR W. PRIAULX (*Pacific Northwest on Guard*), a former newspaper man, is now associated with the West Coast Lumbermen's Association.

ELIZABETH FORBES (*Planting Trees Was His Hobby*), free-lancer and a native of the Lone Star State, started her successful literary work writing juvenile stories. Her diversions, when time permits, are gardening, horseback riding and skiing.

L. E. MANNING (*All That Flowers Does Not Fruit*), president of the Kelsey Nursery Service, continues his interesting and informative series of articles on shade trees.

THE COVER — "Oak In Autumn" — photograph by John Kabel.

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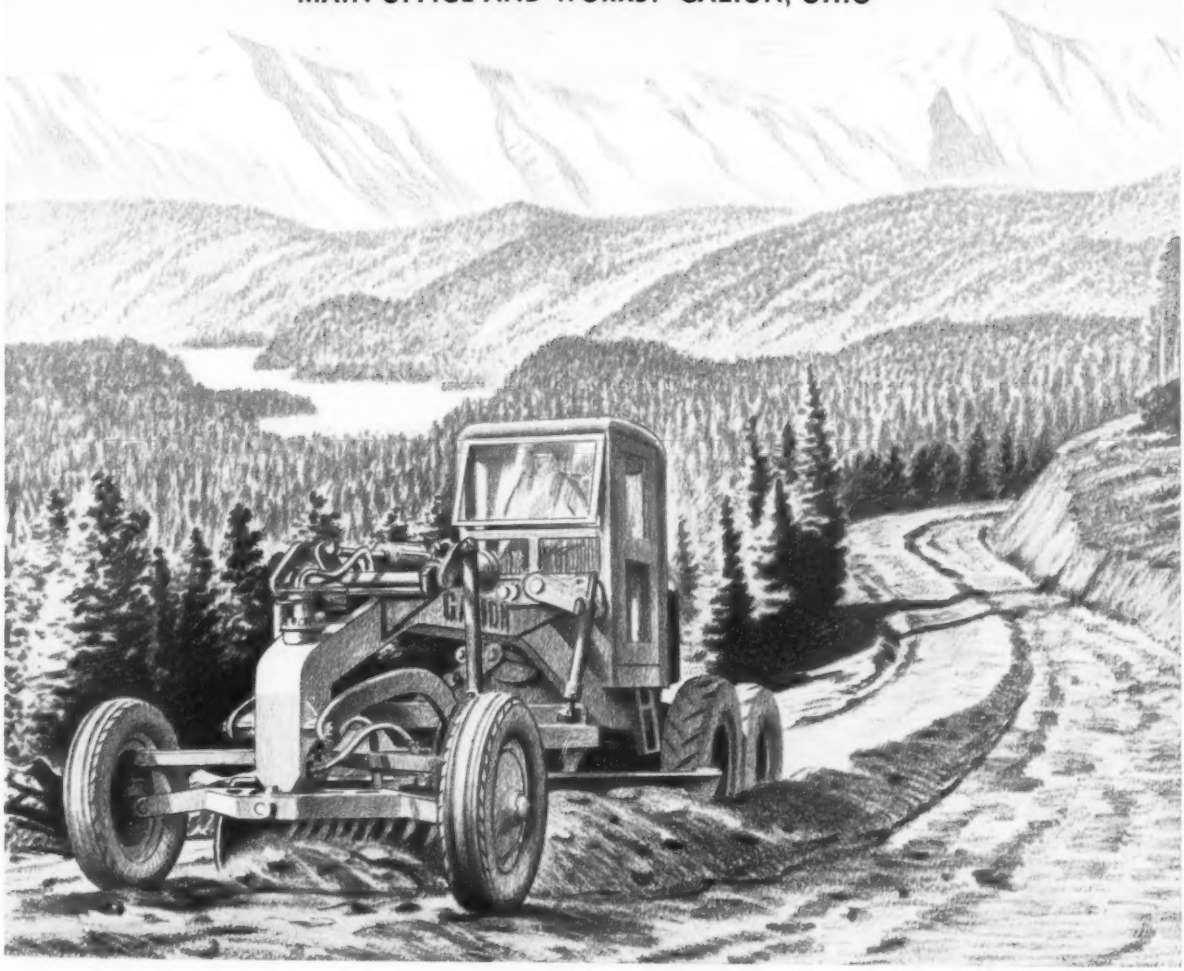

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